Megapixel
1280 x 960
software zoom

30 Frames/s
VGA (640 x 480)
10 fps Mega

-22°F to +140°F
Weatherproof
-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af
PoE
network power
even in winter

microphone & speaker
Audio
bi-directional via IP
variable framerates

Video SIP Client
IP-Telephony
alarm notify,
cam remote control

Video motion
multiple windows
precision pixel-based

lip-syncronized audio
Recording
event-ringbuffer
30 cams each 30 fps

Live viewing
30 cams at 30 fps
all on one screen

Backlight
safe using CMOS
without mechanical iris

Wall bracket
with cable cover
for RJ45 wall outlet

Robust
no moving parts
fiber glass housing

M22M
Camera Manual
Part 1

Complete integration for web and security

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Security-Vision-Systems
MOBOTIX AG

MOBOTIX ... the new face of IP video

MOBOTIX Camera Data

Enter the data of your camera here!

Camera Model: _____

Camera Name: _____

Factory IP Address: ____ . ____ . ____ . ____

Current IP Address: ____ . ____ . ____ . ____

DHCP: activated ❑ deactivated ❑

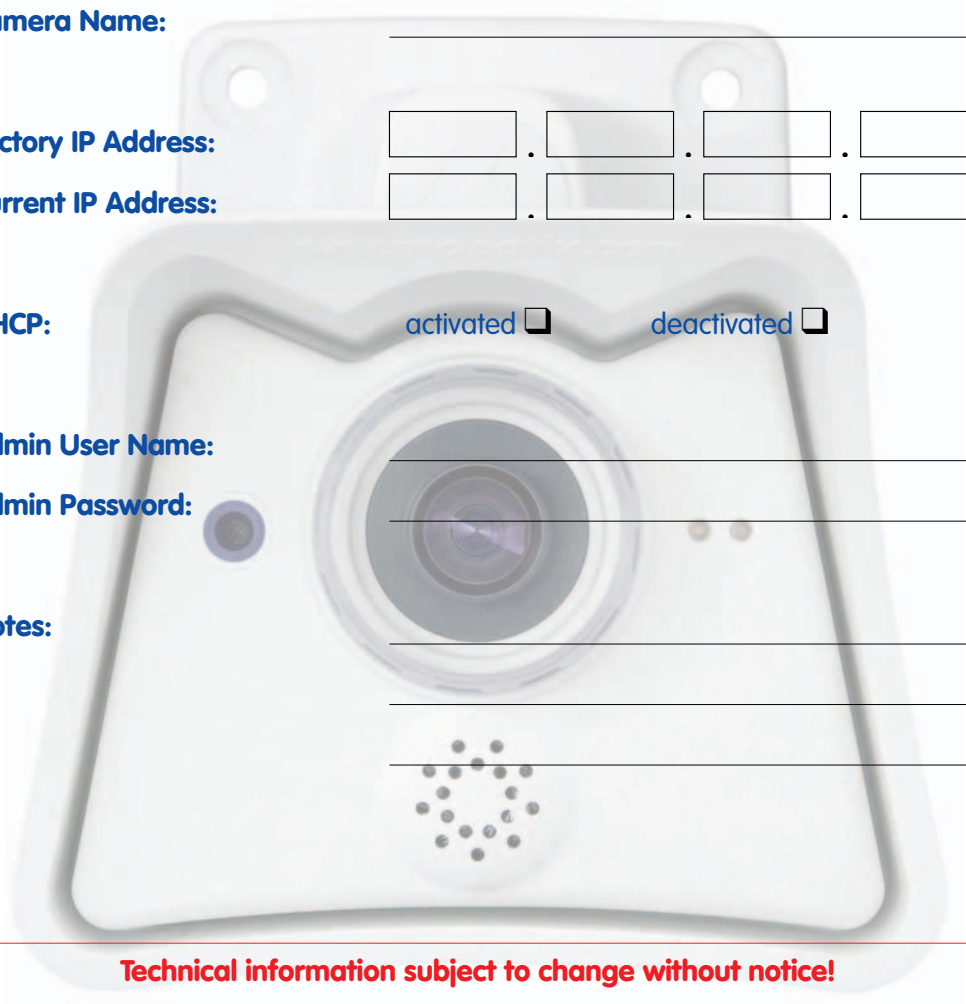
Admin User Name: _____

Admin Password: _____

Notes: _____

_____

_____



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Note: MOBOTIX offers inexpensive seminars that include a workshop and practical excercises:

Basic Seminar 2 days, **Advanced Seminar** 2 days.

For more information, see **www.mobotix.com**

M22M CAMERA MANUAL

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M22M SOFTWARE FEATURES

IP65 CERTIFICATE

FCC DECLARATION OF CONFORMITY

DECLARATION OF CONFORMITY

DRILLING TEMPLATE (1:1)

Note

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SOFTWARE CAMERA MANUAL

PART 2

Note

All chapters listed in the following (4 and higher) are part of the **Camera Software Manual** (*Software Manual* in short). The main headings are listed below to give you an overview of the *Software Manual* contents.

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APPENDIX: MODEL FEATURE LIST

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1 INTRODUCTION

30 frames per second!

The **M22M** camera range represents the second generation of MOBOTIX network cameras. Now more powerful than ever, the new compact models are capable of creating high-resolution live video streams with high image rates. When showing **VGA video (640x480)**, the camera can deliver up to **30 fps** (frames per second). Even **Megapixel video (1280x960)** will still generate up to **10 fps**. The camera transmits realtime sound from the microphone, even in the browser.

Similar to previous MOBOTIX cameras, M22M cameras are available as **SECURE**, **IT**, **WEB** and **BASIC** models, with WEB and BASIC models just missing the microphone. The M22M can be fitted with one of the five M14 high-performance lenses or with CS mount lenses (model M22M-SecureCS).

Everything integrated!

Like all other MOBOTIX cameras, the M22M models are more than "just a camera"; the integrated software features (Secure/IT models) include a multitude of functions, such as **video motion detection**, **long-term recording**, **alarm messaging** and **video IP telephony**. As opposed to other camera systems, buying and installing additional software on the computer is thus unnecessary. Instead of using a web browser, you can also download the free **MxViewer** for Windows from **www.mobotix.com**, which allows displaying multiple cameras on one monitor. Moreover, MxViewer can also process incoming alarms from the camera and allows for comfortably searching and evaluating the alarm video clips (including audio).

Because of the low power consumption of only 3 Watts, the MOBOTIX M22M cameras feature the highest operating temperature range in the market from **-30 to + 60°C (-20 to 140°F)**. Since MOBOTIX cameras neither fog up nor require heating, power can be supplied using standard PoE products. All models come with a wall mount that covers wall outlets and conceals the cabling.

1.1 The Concept of MOBOTIX M22M

High-Resolution Live Video (640x480) with up to 30 Frames/s

The second camera generation from MOBOTIX now delivers smooth live video display in VGA format with realtime audio channel, yet it keeps the network load to a minimum (approx. 2 Mbps). Live video display thus matches the performance of analog video systems. When recording, MOBOTIX systems easily outperform analog systems, since the MOBOTIX cameras store the same resolution and quality with the same frame rates as in the live display. MOBOTIX technology thus allows recording **30 cameras** in continuous recording mode on one standard PC at **30 fps** each, including the audio channel of the cameras.

Low Bandwidth Requirements

MOBOTIX' patent pending **MxPEG** streaming format allows fast live video with audio at extremely low network loads (1 to 2 Mbps). Since the MOBOTIX camera itself detects movements in the image, video is only transmitted if movements occur, and when the video and audio data are stored.

Voice over IP

IP Telephony!

MOBOTIX **MxPEG** video streaming format includes realtime audio and intercom features. Room surveillance with audio is possible using Internet Explorer or MxViewer. Alarm notification on your mobile or via Internet telephony is just as easy as event-controlled voice messages directly from the camera.

IP Telephony and Video SIP

All telephone features can be used via Internet telephony thanks to the integrated SIP client. The SIP client allows remote-controlling the camera using the touchtone keys and also places the alarm calls of the camera. Video SIP establishes audio/video connections to the camera using Windows Messenger.

Long-Term Storage Included

MOBOTIX cameras have an integrated long-term storage system for Linux, Windows and Mac OS X computers. Thanks to the decentralized approach, 30 live cameras can store images on a regular Pentium 4-class computer with **30 fps each**, including audio (depends on the operating system).

Event Storage on the Integrated CF Card (Optional)

For most applications, the MOBOTIX-installed CF card provides more than enough storage space, since this flash card (2 GB and higher) stores the audio/video data permanently, even after power failures. If long-term storage on a file server has been set up, the CF card adds yet another layer of security against loss of data, as the flash card can easily bridge longer network outages.

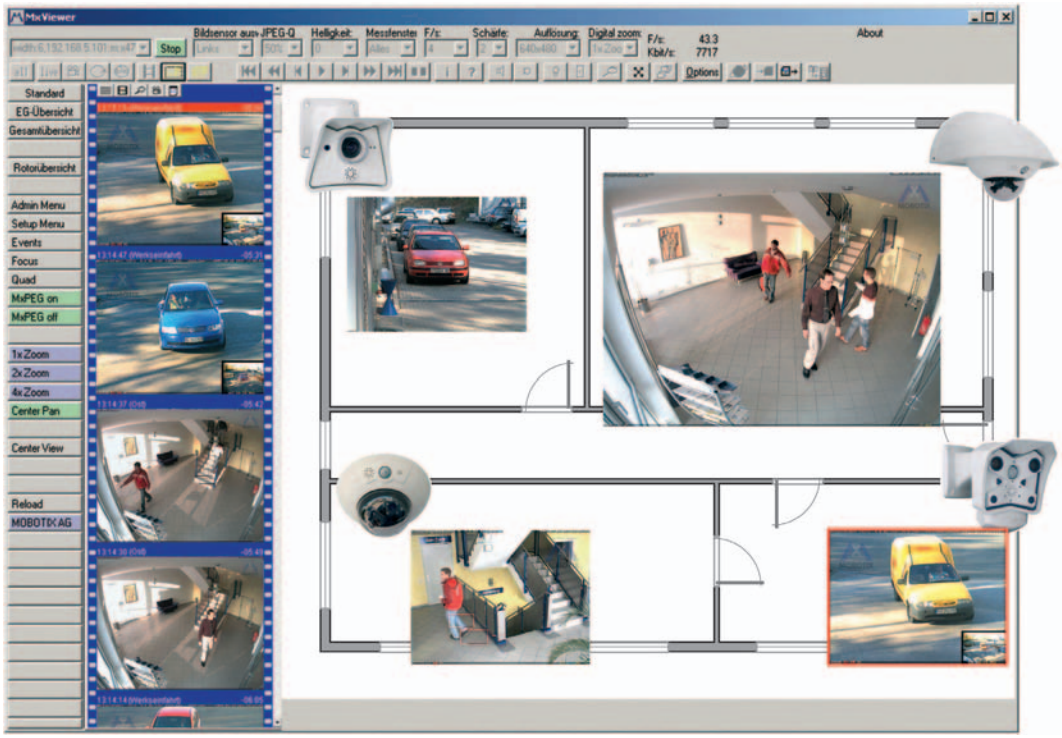
Wireless and UMTS/3G Using CF Card (Optional)

When using one of the MOBOTIX-installed Wireless or UMTS/3G CF cards for the second CF slot of the M22M, operating the system at hard-to-reach locations becomes easier and a lot more cost-efficient.

30 Live Cameras Using MxViewer

Download MxViewer free of charge from www.mobotix.com

The free MxViewer Windows client for viewing up to 30 MOBOTIX cameras with audio now features an integrated layout editor for quick assembly of building plans—using full drag&drop support for positioning the live camera images. Load a floor plan as background image, drag&drop the cameras—done.



Event and Time-controlled

Just like event-controlled recording upon detecting movements in the image, the camera can also record when the volume recorded by the microphone exceeds a set trigger value. Using scheduled recording, time tasks can start or stop video recording, uploading of images to a web site or sending of e-mails with video/audio clips. Special programs control vacation times and holidays.

Remote Alert Popup

In case of an alarm, MOBOTIX cameras automatically pop up windows or activate other functions at a remote security control center. The cameras can use network/wireless, GSM/GPRS/UMTS (3G) or Internet connections for this purpose.

Power over Ethernet Integrated

No heating—PoE even in the winter

Power is supplied via the network cabling using either devices that supply PoE according to IEEE 802.3af, the MOBOTIX Network Power Adapter or the Network Power Racks (up to 20 cameras). Since the camera's plastic housing insulates well and does not fog up, no additional heating or fans are necessary. This is why MOBOTIX cameras have low power requirements (3 Watts) and can be operated every day of the year indoors as well as outdoors and why PoE can be used for supplying power—unlike in other cameras.

Weatherproof

MOBOTIX cameras are certified according to IP65 and are designed for outdoor as well as indoor usage. As the cameras do not have any moving parts, they are extremely robust and resistant against heat or cold (-30°F to +60°C; -22°F to + 140°F).

Secure and Flexible Installation Using the SecureFlex Mount

Covers RJ45 wall outlets and conceals the cabling

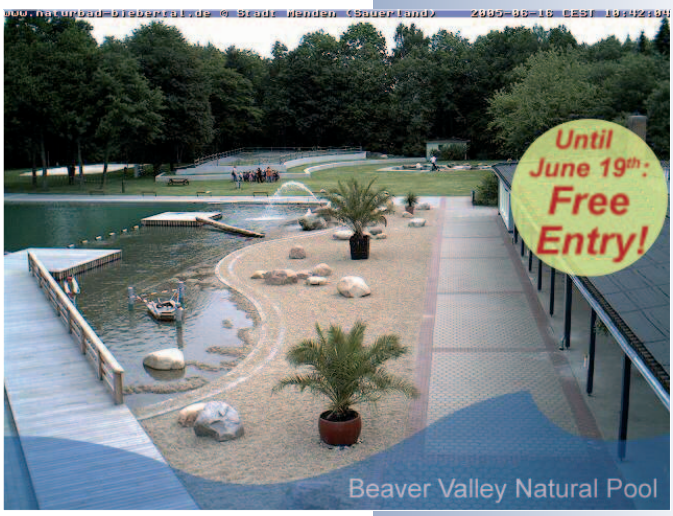
The SecureFlex wall mount provides easy mounting of the MOBOTIX M22M to a wall or ceiling and also allows positioning the camera into virtually any direction, while the concealed cabling enhances the visual impression of the installation. The mount completely covers wall outlets and allows using a defined network end point, thus facilitating the installation.

Logos, Animated or Freestyle

Logo generator integrated

The Logo generator of the MOBOTIX camera allows integrating different banners and graphics into the current camera images—with optional scheduler control. MOBOTIX cameras are the only cameras supporting animated and transparent graphics.

M10-Web: Megapixel Camera with Logo Generator
multiple logos · free outline with holes · transparency · time driven
Free Contour
1280 x 960 Pixel



1.2 Product Advantages of the MOBOTIX M22M

Product Advantages

- MOBOTIX M22M camera models support the Power-over-Ethernet **standard IEEE 802.3af** as well as the MOBOTIX power supply technology.
- **USB connector** for MOBOTIX expansion modules.
- **Individual lens configuration** possible.
- Version CS with standard CS thread allows using **CS mount** and **C mount** lenses (C mount with adapter ring).
- Internal memory can be expanded using non-volatile **CF cards** (only installed by MOBOTIX; available in future versions).
- Optional **Wireless** or **UMTS/3G** functionality thanks to **CF cards** (only installed by MOBOTIX; available in future versions).
- High image quality with a resolution of **1.3 M pixels**.
- Fully browser-based—**no software installation** required.
- Simple connection to IP network or DSL using the integrated 10/100 Ethernet interface.
- Camera configuration and playback of recorded images from any standard browser.
- **Realtime audio** and **intercom** features when camera calls using integrated IP telephony.
- Audio room surveillance using standard browser (Internet Explorer). The camera microphone can be deactivated irreversibly.
- **Minimal network load** thanks to innovative MxPEG compression scheme (patent pending).
- Integrated event-controlled or scheduled recording.
- Live recording of up to **30 cameras with full 30 fps each** on one single Pentium 4-class PC—audio included.
- No limitation regarding the number of cameras and storage media; the system remains scalable.
- **Long-term storage of videos** including audio or individual images in a ring buffer on a standard PC or file server.
- **Integrated ring buffer** can bridge network outages of up to 4,000 images or 6 minutes video; this can be further expanded when using the CF card option.
- Maintenance-free and **weatherproof from -30 to +60°C (-22 to 140°F)** since the system has no moving parts.
- Alarm notification via e-mail, SMS or phone call.
- **Backlight correction** with predefined and customized exposure areas.
- Professionally equipped with integrated sensors: **Video motion detection, microphone and speaker**.
- Flexibly positioned with **concealed cabling** and **covered wall outlets** thanks to SecureFlex mount.
- Free **MxViewer** for Windows for displaying and managing MOBOTIX cameras includes alarm management, background images, etc.
- Platform-independent **SDK** allows developing applications; includes sample applications (MxPlayer, MxPEG-to-MJPEG converter) and the source code.

1.3 Feature List

In its factory state, the MOBOTIX camera has the following main features (some features are model-dependent):

- **Live images** of up to 1280 x 960 pixels resolution via network, GSM, GPRS, UMTS, wireless up to 30 fps (at 640 x 480 resolution), also adapted for **PDAs**.

1280 x 960 pixels

- **Digital zoom** with three stages (1x, 2x, 4x) and integrated panning (from 2x: clicking in the browser image will move the visible image section in that direction).
- **True software scaling** using the proven and continuously improved MOBOTIX algorithms. This results in brilliant image quality even for the scaled-down image formats (e.g. 320 x 240).
- **Audio/video recording** with three different recording modes: Event recording with audio, continuous recording with variable frame rate and audio as well as event-controlled Snap Shot recording of JPEG images.
- **Telephony functions (SIP)** for Phone Call-In and remote-controlling from touchtone phones as well as voice phone calls from the camera for alarm messaging purposes.
- **Video SIP** with support for Windows Messenger and video phones.
- **File server tests** can monitor a file server and use one or more of the defined messaging options for error notification.
- **Camera tests** where several cameras monitor each other, with failure notification using the defined messaging options.
- **Playback** of recorded images/video sequences with audio in the integrated video management system.
- **MultiView** screen for displaying several cameras or events in one browser window.
- **Event notification** by e-mail, SMS (using a provider), voice notification (Phone Call-Out), sounds and by visual means (e.g. red frame in Live image) using two separate messaging paths.
- **Object tracing** for analyzing the paths of objects that are moving in the image.
- **Logo generator** for displaying logos in the camera images with dialogs for managing image files, image and logo profiles for controlling logo display.

Logo generator

- Logos can have **transparent areas** and can be displayed partially transparent at the same time (creating a watermark effect), banner rotation and animations are also possible.
- **Transfer profiles** for improved handling of FTP, E-Mail, phone calls, IP Notify transfers and messages.
- **Time Tables** for handling customized days, e.g. for holidays and vacations. The time tables are used to control the camera's arming, image recording, action, messaging, logo, obscure image and other features.
- **Speaker phone** with speak, listen and intercom modes via Internet telephony (SIP) using the integrated microphone and speaker.

Speaker phone

- **Phone Call-In** to remotely control the camera using a touchtone phone via Internet telephony (retrieve camera information, establish Internet connection, announcement of retrieved IP address, intercom feature, etc.).

Telephony features using VoIP connections (Internet telephony)

- **MxPEG video compression** using the free **MxViewer** for Windows. The ActiveX plug-in for Internet Explorer users brings all advantages of MxPEG (including the camera's audio stream) to the browser-based user interface.
- **Routing** allows using other network connections besides the standard route.
- **DynDNS client** for accessing the camera using a symbolic name (e.g. **`mymobotixcam.dyndns.org`**) although the provider is assigning a new IP address every time the camera connects to the Internet.
- Inerasable **backup operating system** automatically takes over when rebooting the camera after updating the system software has failed, allowing you to restart the update process.
- **Enhanced startup options** for the camera (obtain IP address via **DHCP**, announcement of IP address and other network data, reset to factory default settings).

Free software updates on www.mobotix.com

Software Updates

MOBOTIX provides **free** software updates at regular intervals that improve and expand the camera's functionality. To download the update, go to **`www.mobotix.com`** and open Services. Chapter 6, *Software Update*, in the *Software Manual*, provides more information on the process.

Notes:

1.4 Important Notes

1.4.1 MOBOTIX M22M—Weatherproof with IP65

MOBOTIX M22M is **IP65** weatherproof (absolutely dustproof, resistant against water jets) when used with the MOBOTIX M14 lenses and mounted lens cover.

CAUTION: Only use the supplied connection cables and make sure that the supplied rubber plugs have been fitted to seal off both connectors. Note that the camera *must never be installed without* properly installed connection cables and rubber plugs!

1.4.2 Password for the Administration Menu

Administration menu:
User: admin
Password: meinsm

The administration area of the camera (**Admin Menu** button) is protected by a user name and password:

- User name is **admin**
- Password is **meinsm**

Enter the user name and password exactly as shown above. Note that both entries are case-sensitive. When accessing the administration menu for the first time, the **Quick Installation** wizard will help you set the most important parameters that are relevant for your requirements. **For security reasons, it is highly recommended to change the adminstrator password after the camera has been configured properly.**

CAUTION: Make sure that you store information on user names and passwords in a secure place. In case you loose the administrator password and cannot access the Admin menu, the password can only be reset at the factory. This service is not free!

1.4.3 Irreversibly Deactivating the Microphone

The microphone can be deactivated irreversibly!

Deactivating a camera's microphone may become necessary in order to protect the privacy of people at a workplace or for other reasons. You can permanently and **irreversibly** deactivate the microphone in the **Admin Menu > Loudspeaker and Microphone** dialog.

CAUTION: This deactivation is permanent and cannot be reversed even by MOBOTIX engineers. Deactivating the microphone will also deactivate all features that use the camera's microphone.

1.4.4 Starting the Camera Using the Factory IP Address

If the camera's IP address is not known any more, you can start the camera with its factory IP address. Section 3.6, *Starting the Camera Using the Factory IP Address*, describes this procedure in more detail.

1.4.5 Resetting the Camera to Factory Defaults

All settings of the MOBOTIX camera can be reset permanently to the factory default settings. This makes sense if you have, for example, obtained a camera without any information or you would like to reset all settings after testing the camera. In order to perform this procedure, you need to have access to the administration area of the camera (Admin rights). Open **Admin Menu > Reset ...** to reset the camera to factory defaults.

Note: In contrast to the method described in section 3.6, *Starting the Camera Using the Factory IP Address*, **all users (except the `admin` user) will be deleted** when resetting the camera to factory defaults. Likewise, **the admin user's password will be reset**.

The configuration can also be reset partially

1.4.6 Deactivating Event Control for Web Applications

In its factory state, the camera's event control and video motion detection features are enabled. Hence, the camera stores images as soon as the video motion window (dotted frame in the image center) detects movements. In order to deactivate event control as a whole, open **Setup Menu > General Event Settings** and deactivate the **Arming** switch. This will also remove the video motion window (dotted frame) from the live image.

The dotted rectangle in the live image will be removed when deactivating Arming

1.4.7 Deactivating Text and Logo Options

In its factory state, the MOBOTIX camera displays text information at the top and bottom of the live image. Also, the camera displays a logo on the top right corner of the live image. You can deactivate the status text at the bottom and the text at the top left corner of the live image by setting **Text Display** in the **Setup Menu > Text & Display Settings** dialog to *Date & time*. Setting **Text Display** to *Off* will deactivate all displayed text in the live image. In order to hide the logo in the live image, open **Admin Menu > Logo Profiles** and set **Logo Display** to *Disable*.

Text and logos can be deactivated or customized to your liking

1.4.8 Deactivating the Daily Reboot of the Camera

In its factory state, the MOBOTIX camera will automatically reboot every morning at 3:36 am. In very rare cases, external influences (e.g. radiation in high locations) can lead to camera malfunctions. The automatic reboot will refresh the camera's memory and will ensure proper operation without requiring any interaction on the part of the user.

Open **Admin Menu > Time Tasks** and deactivate or delete the *Reboot camera* task. This will prevent the camera from rebooting automatically.

Deactivating the camera reboot

1.4.9 Browser Hints

Current browsers with activated **JavaScript** (Internet Explorer, Netscape, Mozilla, Firefox, Safari, Konqueror, Opera, ...) can show the camera's live images with their standard settings. Text-based browsers (e.g. `lynx`) cannot display the user interface and are *not* suitable for operating the camera.

Section 4.8, *Browser Settings*, in the *Software Manual*, contains more information on browser problems. Chapter 12, *Troubleshooting*, contains more information on how to track and remove errors when operating the camera.

1.4.10 Cleaning Instructions

Cleaning the Lens Cover

- You should clean the lens cover at regular intervals. Always use a lint-free cotton cloth for this purpose.
- If the dirt is more persistent, add a mild alcohol-free detergent without abrasive particles.
- Make sure you instruct cleaning personnel on how to clean the camera.

Cleaning the Lens

- If the lens is dirty from the installation process, clean the lens using a lint-free cotton cloth. Make sure that the lens is still in focus after cleaning and adjust the lens' focus if required.

1.4.11 Safety Notes for Operating MOBOTIX Cameras

Electrical surges can be induced by other electrical appliances, improper wiring, but also from the outside (e.g. lightning strikes in phone or power lines).

MOBOTIX cameras are protected against small **electrical surges** by numerous measures. These measures, however, cannot prevent the camera from being damaged when stronger electrical surges occur.

Special care should be taken when installing the camera **outside of buildings** as **protection against lightning** also protects the building and the whole network infrastructure.

MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Section 2.8, *Wiring, Fire Prevention, Lightning and Surge Protection*, contains more information on these topics.

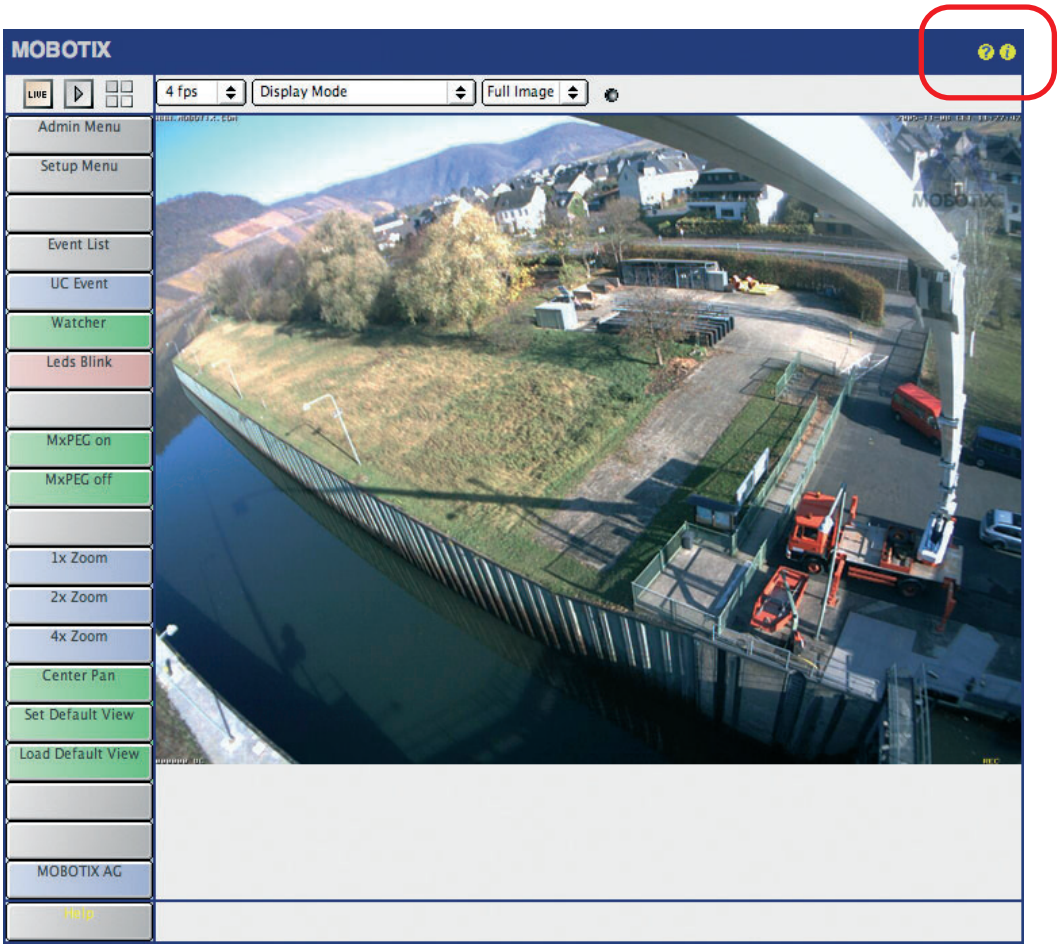
1.4.12 Additional Information

Camera Help

Camera information

For more information on this topic, see the **News** and **Functional Overview** pages in the online help of the camera's browser interface. Click on the yellow icon in the top right corner to open the camera's online help.

In order to get more information on the camera and its current configuration, open the **Camera Status** dialog by clicking on the yellow icon in the top right corner of the camera's browser interface.



Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from **www.mobotix.com**. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

2 MOUNTING THE CAMERA

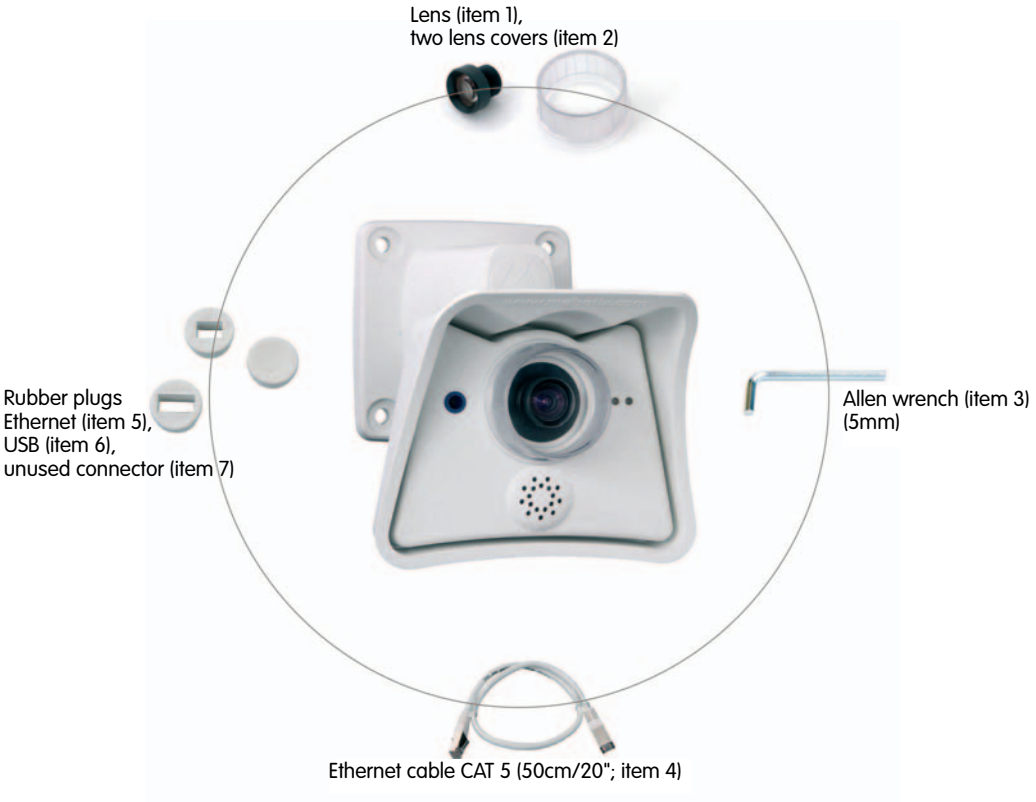
2.1 Quick Start

Mounting the MOBOTIX M22M generally follows **these steps**:

- **Checking the Delivered Parts** (section 2.2)
- **Selecting the Power Supply** (section 2.4)
- **Mounting the MOBOTIX M22M to a Wall or Ceiling** (section 2.7)

2.2 Delivered Parts of the MOBOTIX M22M

Make sure to check the delivered parts



Item	Count	Part Name
1	1	Lens (installed)
2	1	Lens cover (installed), replacement lens cover
3	1	Allen wrench
4	1	Ethernet cable (installed)
5	1	Rubber plug for Ethernet connector (installed)
6	1	Rubber plug for USB connector
7	1	Rubber plug for unused connector (installed)
Mounting Supplies		
8	4	Dowels 8 mm
9	4	Stainless steel washers Ø 12 mm
10	4	Stainless steel wood screws with hex head 6x50 mm
11	5	Caps for covering screws
12	1	Hinged ferrite

Mounting supplies are included!

2.3 Camera Housing and Connectors of the MOBOTIX M22M

The MOBOTIX M22M consists of two main components, the camera itself and the SecureFlex wall mount. Like the M10 models, the MOBOTIX M22M also features an integrated microphone and a speaker.

2.3.1 Connectors

- **10BaseT** (Ethernet network)
- **USB connector** (MOBOTIX expansion modules)

LED signals:

Power / Ethernet

Event / Recording

2.4 Power Supply of the MOBOTIX M22M

The M22M supports the Power-over-Ethernet standard IEEE 802.3af

In order to reduce the amount of cabling, you should always use the Ethernet cable (**Power over Ethernet**) to supply power to the camera.

For smaller installations, the MOBOTIX **Network Power Adapter** *MX-NPA-3-RJ* and the external power unit *MX-SNT-E01-30-RJ* may suffice; larger installations would benefit from one or more MOBOTIX **Network Power Racks** that are available for supplying power to 4, 8 or 20 cameras (*MX-NPR-4*, *8* or *20*). Open **shop.mobotix.com** in the **Accessories** section to find more information on these and other items.

Network Power Adapter
MX-NPA-3-RJ

Network Power Box
MX-NPR-4

Network Power Rack
MX-NPR-20

Since the MOBOTIX M22M supports **Power over Ethernet (IEEE 802.3af)**, you can also use PoE switches for supplying power.

Note

If you are using **Power over Ethernet components (IEEE 802.3af)** for supplying power to the MOBOTIX M22M, these components have to provide **PoE class 0** (12.95 Watts max. power consumption of attached device). Although the M22M only uses 3 Watts and does not require heating even at very low temperatures, this will ensure that devices attached to the USB port of the camera will be properly supplied.

Section 3.3, *Connecting the Camera*, contains more information on the possible combinations of connections and power supply options.

Notes:

2.5 Mounting Options and Positioning

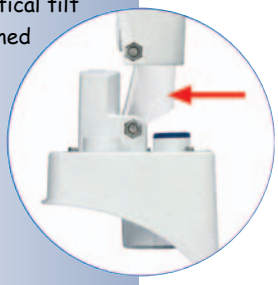
Mounting to a ceiling or wall

Mounting to a wall

Mounting to a ceiling

Tilting (ceiling mount)

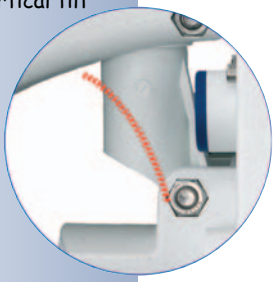
To increase the tilt of the camera, the vertical tilt joint can be turned around 180 degrees (see red arrow!)



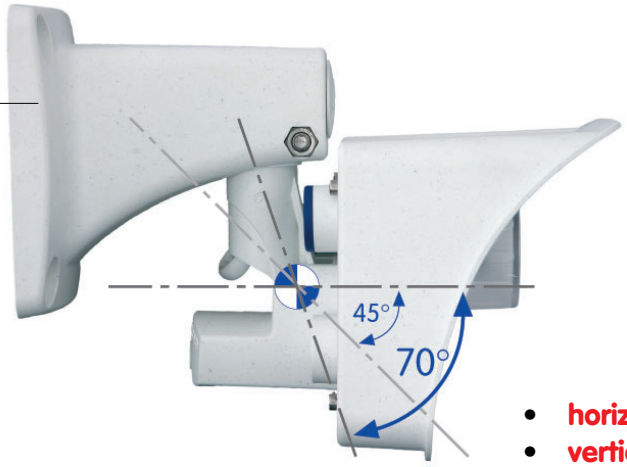
- **horizontally**: 360°
- **vertically**: 90°

Tilting (wall mount)

To increase the tilt to 70° when mounting the camera to a wall, the vertical tilt joint can be shortened (see dotted red line!)



Mount



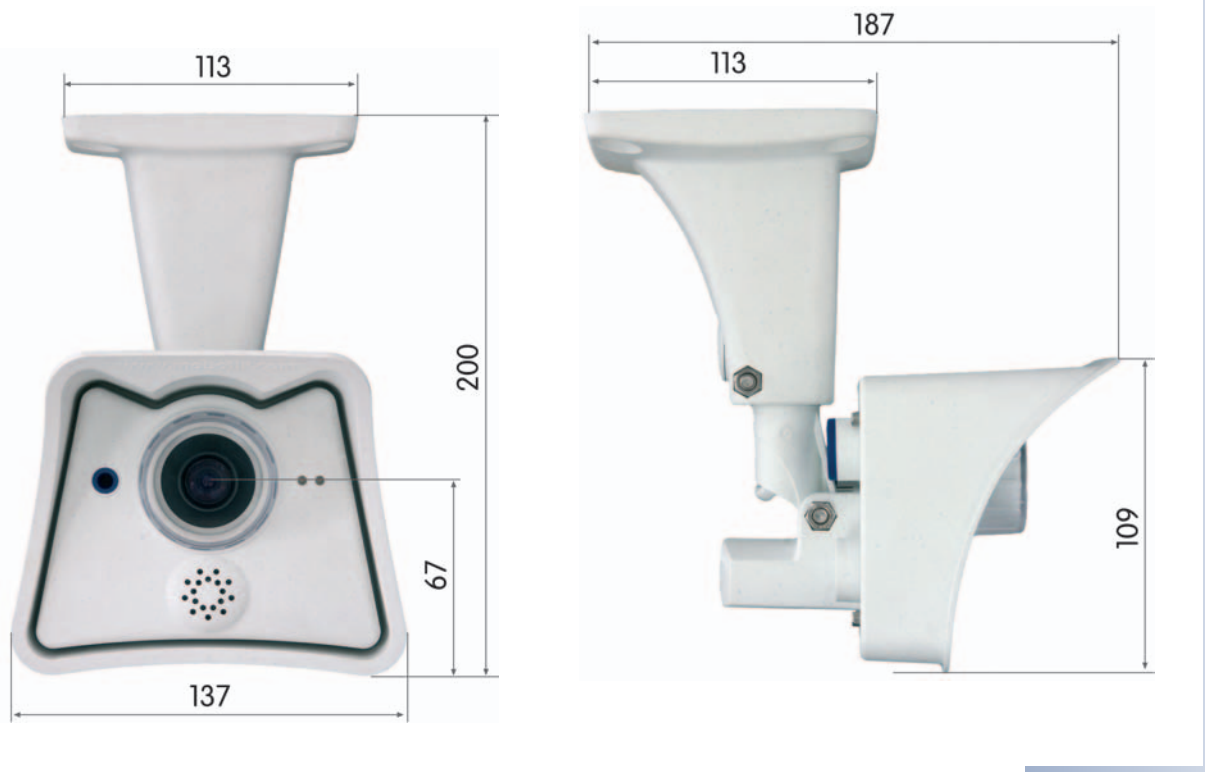
- **horizontally**: 180°
- **vertically**: 70°

2.6 Dimensions of the MOBOTIX M22M

The **SecureFlex mount** enables easy mounting of the MOBOTIX M22M models to a wall or ceiling; the concealed cabling enhances the visual impression of the installation. The foot of the supplied wall mount is large enough to elegantly cover wall outlets (see section 2.7.4, *Mounting the Camera over Wall Outlets*).

Elegantly covers wall outlets

Check the appendix for the drilling template, which will be helpful when drilling the holes for the supplied SecureFlex wall mount. For more detailed information on planning, please download the **MOBOTIX Planning Aid** from **www.mobotix.com**.



Download planning aid from www.mobotix.com

Find the drilling template at the end of the manual

All measurements in mm!

2.7 Mounting the MOBOTIX M22M to a Wall or Ceiling

The mount covers RJ45 wall outlets and conceals the cabling

The wall mount is large enough to **mount the camera over a wall outlet** (see section 2.7.4, *Mounting the Camera over Wall Outlets*).

In order to increase the tilt of the camera, turn the vertical tilt joint by 180 degrees or shorten it.

Caution

Only use the supplied connection cables and make sure that the supplied rubber plugs have been fitted to seal off both connectors. Note that the camera *must never be installed without* properly installed connection cables and rubber plugs!

Never use screws with countersunk heads to fasten the mount, as these screws will destroy the mount.

2.7.1 Mounting to a Wall

Before attempting to mount the camera, make sure that you have found the best camera position. It is important that the camera's field of view is not obstructed in any way.

Once the camera has been mounted to the wall, you can fine-tune its position. Using the integrated SecureFlex wall mount, the camera can be turned horizontally and tilted vertically.

When mounted to a wall, the camera can be **turned/tilted** as follows:

- **horizontally**: approx. 180°
- **vertically**: approx. 70°

2.7.2 Mounting to the Ceiling

Before attempting to mount the camera to a ceiling, make sure that you have found the best camera position. It is important that the camera's field of view is not obstructed in any way.

Once the camera has been mounted to the ceiling, you can fine-tune its position. Using the integrated SecureFlex wall mount, the camera can be turned horizontally and tilted vertically.

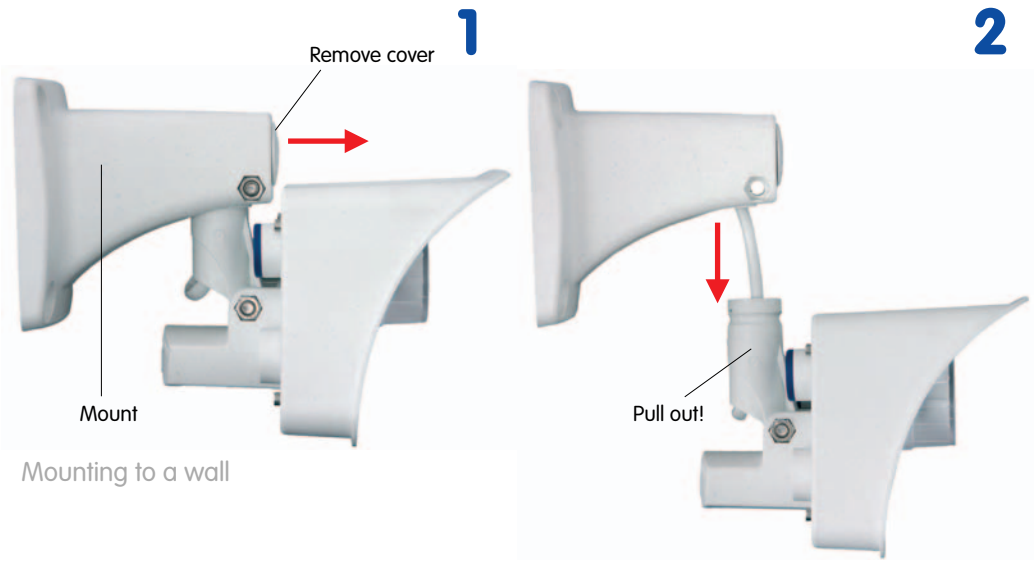
When mounted to a ceiling, the camera can be **turned/tilted** as follows:

- **horizontally**: approx. 360°
- **vertically**: approx 90°

2.7.3 Converting the Wall Mount to Ceiling Mount

If the camera is to be mounted to a ceiling, it is necessary to convert the SecureFlex wall mount. Proceed as outlined in the following:

Converting from wall mount to ceiling mount in four steps



Mounting to a wall

Mounting to a ceiling

- Unscrew the **Allen screw** in the mount, which holds the turn/tilt unit in place (5 mm Allen wrench). Remove the Allen screw, the washer and the hex nut from the mount and unplug the **cover**.
- Gently pull the **turn/tilt unit** and the installed cable out of the vertical opening of the mount.
- First insert the **cable**, then the turn/tilt unit into the horizontal opening of the mount (all the way to the stop).
- Press the **cover** into the unused opening of the mount.

- Place the hex nut into the corresponding hole, insert the **Allen screw** with washer and lightly fasten the screw so that you can still easily move the camera.

Converting the ceiling mount back to wall mount follows the steps in reverse order.

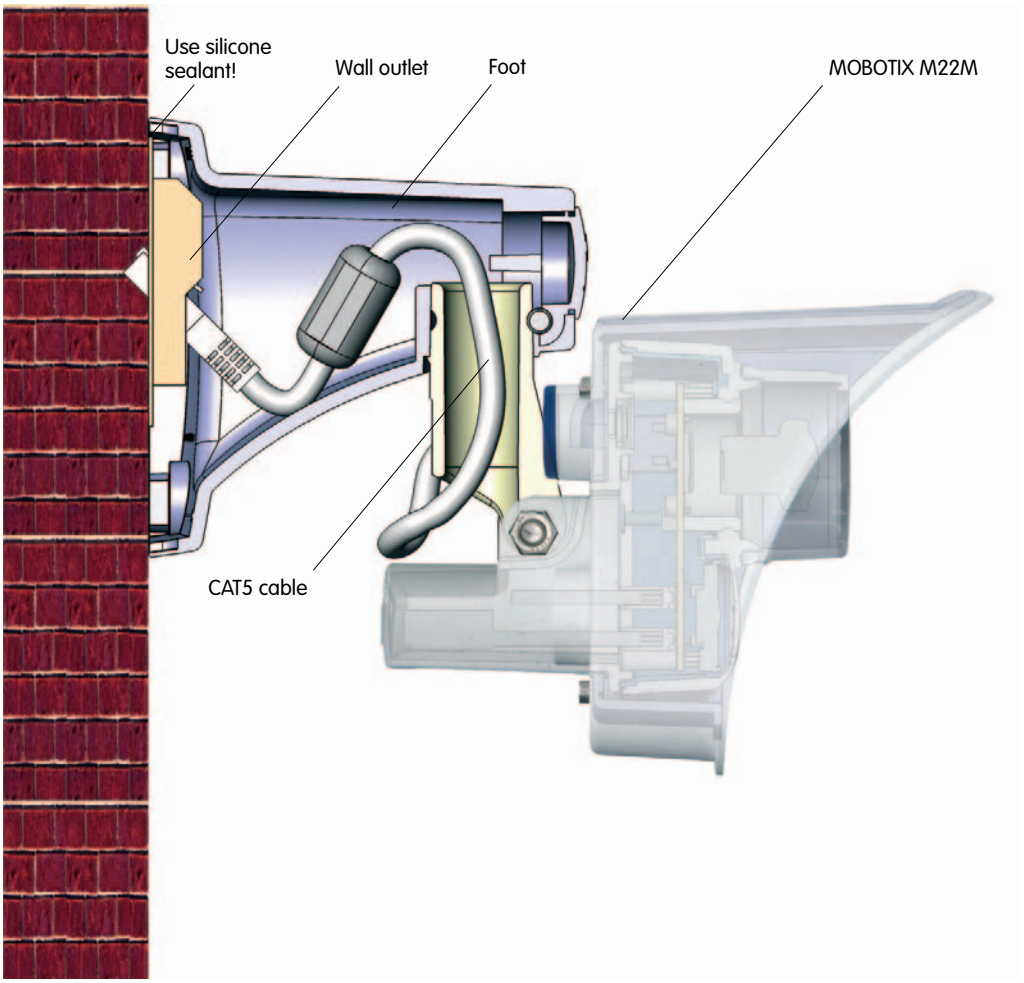
2.7.4 Mounting the Camera over Wall Outlets

Mounting the SecureFlex mount to a wall allows **covering RJ45 wall outlets (without frame)** and also allows using a defined network end point.

When positioning the wall outlet, make sure that the outlet lines up with the upper rim of the mount later on (see figure below and the drilling template at the end of the manual).

The wall mount has to completely cover the wall outlet

If no wall outlet is present, use a suitable extension or an adapter to connect the camera to the network.

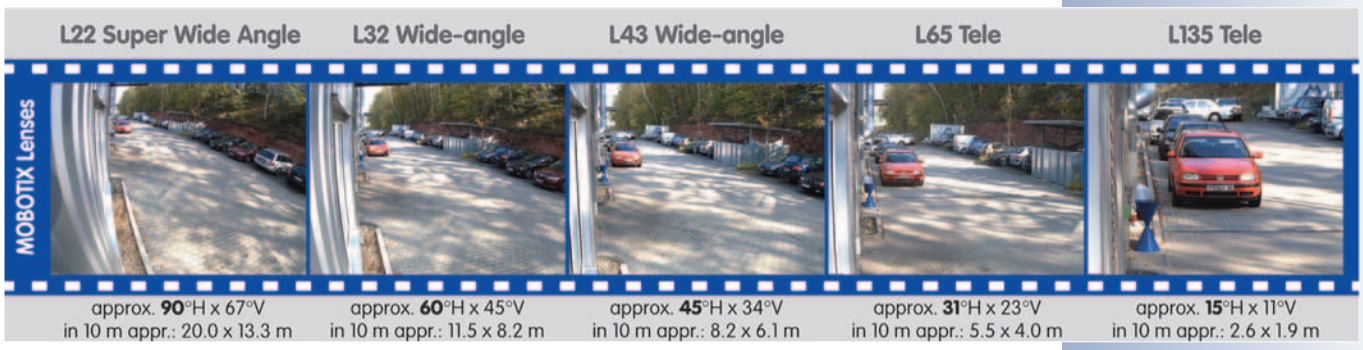


When installing an above-the-wall assembly, breaking out one of the four openings in the base of the mount will provide for properly guiding the cable into the mount.

2.7.5 M14 Fixed Lenses

MOBOTIX offers five different lenses from **Super Wide Angle** (L22) to **Tele** (L135). Since the M22M is backlight-proof, these lenses do not require an auto iris. Without the iris as a mechanical component, these glass lenses are extremely robust and maintenance-free. The standard lens for the M22M Secure and IT models is the Super Wide Angle lens with a **horizontal field of vision of approx. 90°**. Although the Super Wide Angle is a super wide-angle lens, it shows very little distortion and delivers good image quality, even when using the 4x zoom of the M22M. If a camera with a Super Wide Angle lens has been mounted in the corner of a room, the complete room is visible on the image.

L22 Super Wid e Angle lens


L22 Super Wide Angle
L32 Wide-angle
L43 Wide-angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V
in 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V
in 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V
in 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V
in 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V
in 10 m appr.: 2.6 x 1.9 m

Note

MOBOTIX lens designations do not reflect the actual focal length of the lenses, but the focal length (Lxx mm) converted to 35 mm camera format. For example, the MOBOTIX Super Wide Angle lens has an actual focal length of 4 mm. This would be the equivalent of 22 mm on a 35 mm camera and thus results in the MOBOTIX designation "L22" for the Super Wide Angle lens.

Since the image sensors in the cameras have different sizes, converting to 35 mm camera as a known format provides for better comparison of the image format and the field of vision parameters of different lenses. Another benefit is that you can easily set a 35 mm SLR camera to the same focal length (Lxx) to obtain the same field of vision. This approach greatly facilitates lens selection.

2.7.6 CS Mount Version

M22M-SecureCS with L24-54 Vario CS

The **M22M-SecureCS** is delivered with a CS mount and a compact L24-L54 1/2" vario lens. To protect the lens against the weather, this version comes with a longer lens cover (43 mm inside, 53 mm outside) with integrated glass pane and threads for an external filter (40.5 mm x 0.5 mm). This cover will work for lenses, which have a maximum diameter of 36 mm and which are not longer than 43 mm.

Lens cover for Vario CS mount lens

Because of the image sensor's size of 1/2", you can only use CS and C mount lenses (C mount lenses with adapter ring) for 1/2" sensors or larger. Using other lenses will produce shadows at the image borders and will reduce image sharpness. Vario lenses are not maintenance-free, they are definitely less robust and less reliable in the long run as compared to the MOBOTIX M14 fixed lenses. This is why the vario lenses are typically used in applications where locations are changing frequently, e.g. in industrial applications.

2.7.7 Lens Cover with Glass Pane

Lens cover for fixed lenses with tempered glass pane for usage in rough environmental conditions

As an additional accessory, a heavy-duty lens cover with a front glass pane is available for the M22M models. This will improve the durability of the lens cover when used in rough conditions (at the sea, in sand storms, etc.). This lens cover also has a thread size that fits external filters (40.5 mm x 0.5 mm) available from photo shops. For example, you could install a polarization filter to cancel out the reflections from windowpanes or windshields.

Using this lens cover together with the L22 Super Wide Angle lens is not recommended, since this lens cover produces shadows at the image borders.

Caution

Canceling out light reflections

Make sure that the white ring remains in the lens cover, since the ring reduces light reflections and prevents the camera LEDs from adding reflections to the images.

2.7.8 Changing Lenses

Attention: Protection class IP65 will only be reached with mounted lens cover

As described in section 2.7.5, *M14 Fixed Lenses*, the M22M can be fitted with several MOBOTIX lenses. Proceed as follows to change a lens:

- Unmount the **lens cover** by turning it counter-clockwise.
- Loosen the **lens' lock ring** (if fitted) by turning it counter-clockwise.
- Remove the **lens** with the lock ring by turning it counter-clockwise.
- Unscrew the **lock ring** (if present) from the lens you just removed and screw it onto the new lens.
- Screw the **new lens with the lock ring** (if present) back into the camera.
- If necessary, restore the **power supply** of the camera.
- Adjust the **image sharpness** according to the camera's live image on the computer monitor.

Check image sharpness!

- Tighten the **lock ring** by turning it in clockwise direction.

This procedure is the same for the **M22M-Secure-CSVario** and **CS/C mount** lenses, albeit without the lock ring (not installed).

2.8 Wiring, Fire Prevention, Lightning and Surge Protection

When installing the wiring inside or outside of buildings, make sure you always adhere to the relevant regulations on wiring, fire prevention and protection against lightning.

MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Find more information at an institution such as the **International Electrotechnical Commission** (IEC, **www.iec.ch**) or at a manufacturer of protection devices against lightning and electrical surges, such as Dehn (**www.dehn.de**).

2.8.1 Wiring

When installing the wiring, make sure you follow these guidelines:

Use double-shielded CAT 5/7 cables for wiring

- **Data cable:** Make sure you only use double-shielded CAT 5/7 cable (**S/STP**) for Ethernet connections. Double-shielded means that the cable as a whole is shielded and that each twisted wire pair has its own shield.
- **Outdoors:** Installing the camera outdoors requires special precautions and measures regarding the cables as well as lightning and surge protection (see section 2.8.3, *Lightning and Surge Protection*).

Carefully follow these instructions!

- **Wire lengths:** The cable segments must not exceed the maximum allowed cable lengths in order to ensure proper data transfer (see section 3.3, *Connecting the Camera*). Maximum cable lengths should not exceed 30 m (33 yd.) for patch cables and 100 m (110 yd.) for installed cables.
- **Avoid induction:** When running data cables parallel to existing regular power lines or high-voltage wires, make sure you observe the minimum distances to the power cables.

2.8.2 Fire Prevention

When installing the power lines to the camera, make sure you always adhere to the relevant regulations on wiring and fire prevention at the site of the installation.

2.8.3 Lightning and Surge Protection

To prevent damage from lightning and surges, make sure you follow these guidelines:

- **Lightning conductors:** In areas exposed to lightning (e.g. on roofs), a distance holder (1 m/3 ft. higher, 1 m/3 ft. away from the camera) and proper lightning conductors need to be installed in order to prevent lightning strikes into the camera and to ensure that the energy of a lightning strike is properly led to the ground.

- **Surge protection:** Make sure you have installed proper protection against electrical surges in order to prevent damage to the camera, the building and the network infrastructure. This includes surge protectors for 19" racks, adding an uninterruptible power supply (UPS) to the MOBOTIX camera and installing surge arresters or similar for routers, switches, servers, etc.

3 OPERATING THE CAMERA

3.1 General Remarks on Operating the Camera

The MOBOTIX camera **does not require any software installation**; all you need is your preferred browser with JavaScript support to operate the camera. Thus, the MOBOTIX camera is supported by all common operating systems (such as **Windows**, **Macintosh** and **Linux**, ...).

3.1.1 Establishing the Power Supply of the Camera

You can choose between the following options:

PoE: see section 3.3

- **Power over Ethernet**: Power supply using network components that are conforming to the PoE standard **IEEE 802.3af**.
- **External power supply and Network Power Adapter (NPA)**: Power is supplied via the Ethernet cable from the NPA to the camera (max. length 100 m/ 110 yd.).

Netpower for 4, 8 or 20 cameras

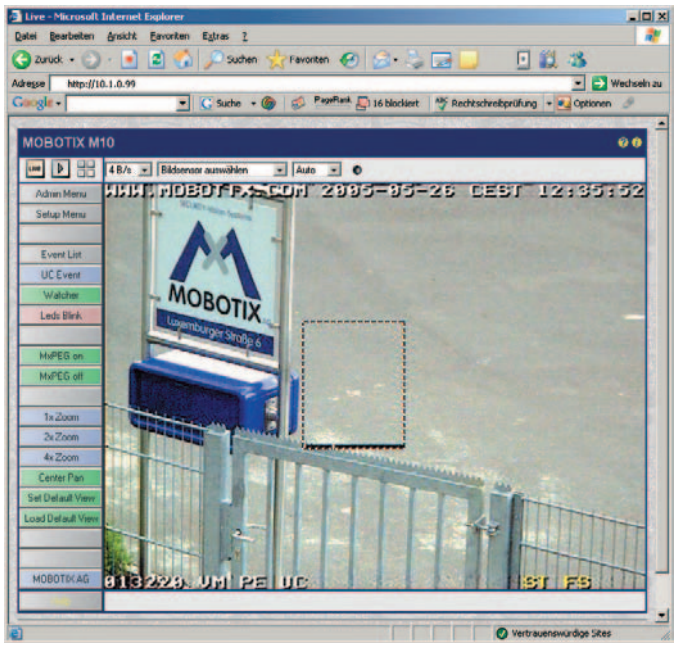
- **Network cable**: Using the **19" Netpower** unit in a patch closet to supply power via the network cable.

3.1.2 Connecting to the Camera

Computer settings:
- IP address: 10.1.0.11
- Netmask: 255.0.0.0
- Gateway: none
- DNS: none

- **Ethernet interface of the camera** (10/100 Mbps Ethernet): Directly from a computer via a Network Power Adapter or a switch using a regular patch cable; launch a browser and enter the IP address printed on the camera label (e.g. **10.1.0.99**).

  If your network does not support a Class A network (i.e. **10.x.x.x**), your PC or laptop will have to be set temporarily to such a network address. For operating systems that allow multi-homing (Windows 2000, Windows XP, Linux, Mac OS X), you can set a second IP address in the **10.x.x.x** network.



Once a connection has been established, click on the **Admin Menu** button to start configuring the camera. The **Admin Menu** controls all network settings (IP address, netmask, DHCP, etc.) and other options.

User: admin
Password: meinsm

Connecting to the camera: see section 3.4

Note

After first booting the new MOBOTIX camera or after resetting to factory defaults, accessing the Administration menu in the browser (**Admin Menu** button) will automatically start the **Quick Installation** wizard. This is where you configure the most important camera parameters in a step-by-step manner. If you have completed the Quick Installation wizard at least once, the standard Administration menu will open.

Always use Quick Installation for initial configuration

The configuration follows these five general steps:

a) Establish the first connection (via the network).
b) Set the parameters for the desired connection type (Quick Installation).
c) Set the event control (events, actions and messages); see chapter 7, *Events, Actions and Messages*, in the *Software Manual*.
d) Set the storage parameters (FTP or external ring buffer storage).
e) Store the configuration in the camera's permanent storage (flash) for rebooting.

Live image: http://preparkcam.mobotixserver.de

3.2 Overview of the Configuration Settings

Always use Quick Installation for initial configuration

- **Quickly installed using the Quick Installation wizard**

  After first booting the camera or after resetting it to factory defaults, any access to the administration menu (**Admin Menu** button) will start the **Quick Installation**.

  This wizard will guide you through the most important settings of the camera (configuration of the network interface, image control, etc.) and can also be used to reset the camera to its factory settings.

  It is recommended to use **Admin Menu > Quick Installation** later on as well, e.g. if you would like to change or add connection methods.

Admin Menu

User: admin
Password: meinsm

- **Administration and setup of the camera**

  Basic configuration tasks of the camera (e.g. passwords, interfaces, software updates) are carried out from the administration menu (**Admin Menu** button), which requires the corresponding access rights (*admin* access level).

  Open the **Setup Menu** (button) and find the dialogs for changing the image, event and recording settings in the **Image Control** and **Event Control** sections. These options are also available for users belonging to the *users* access level.

  Some of these settings can be changed using the corresponding pull-down menus above the image on the Live screen.

Setup Menu

Recommendation:
Always use factory image settings!

- **The image settings are already optimized**

  The factory image settings of the MOBOTIX camera deliver excellent images for most of the application scenarios and should not be changed; if changes are inevitable, the adjustments should be minimal. If you would like to reset changes without resetting the complete configuration to factory defaults, you can use the **Factory** button at the bottom of the dialog to reset only this dialog's settings. If you would like to reset all image settings, you may do so using the **Manage Settings > Restore Image Settings** pull-down menu above the image on the Live screen.

- **All changes are only temporary**

  All changes to the configuration are only temporary and can thus be tested easily. Restoring the old configuration settings can be achieved using the **Restore** button in most dialogs or by running **Admin Menu > Restore last stored configuration from flash** (see also section 5.9, *Managing Settings*, in the *Software Manual*).

Make sure to permanently store changed parameters!

Once you have finished configuring the camera, you should always **store the settings in the camera's permanent memory**. You can do so in each dialog (clicking on **Set** at the bottom of each dialog will temporarily set the changes; clicking on **Close** will ask you to store the complete configuration in the camera's permanent memory) or in the **Configuration** section of the administration menu (**Admin Menu > Store current configuration into flash memory**).

The **Configuration** section of the administration menu provides more functions for storing, copying and managing camera settings. For additional information on this topic, see chapter 5, *Basic Camera Configuration*, in the *Software Manual*.

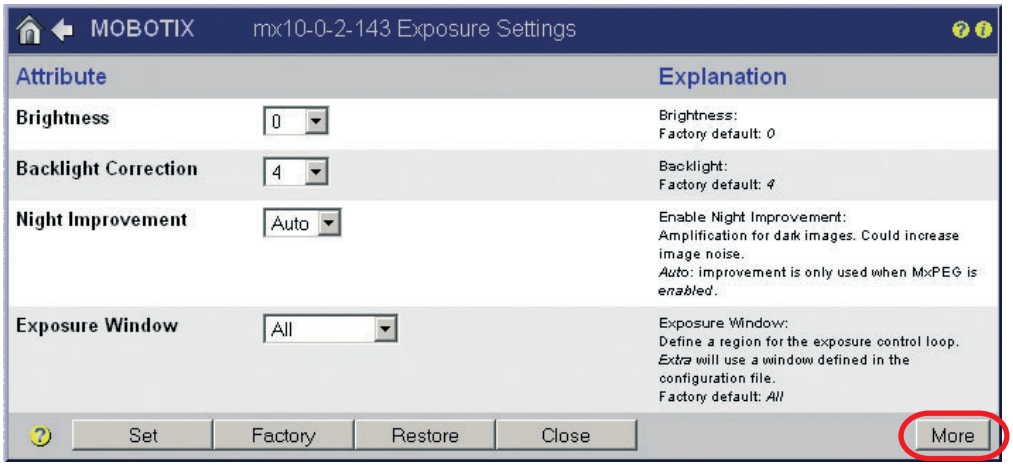
- **A camera that can keep its time**

  Automatic time synchronization using a time server

  Apart from a multitude of possibilities for controlling the camera using time (time tables, holiday and vacation rules, scheduled tasks, etc.), the camera can also **synchronize its internal clock**. This allows you to keep the camera in synch manually with a computer or fully automatic using a time server. The camera can use both NTP time servers or time servers providing Time Protocol (RFC 868). For additional information on this topic, see section 5.4.2, *Date and Time / Time Zones and Time Servers*, in the *Software Manual*.

- **The MOBOTIX camera can do "More"**

  In order to provide a better overview, some of the camera dialogs hide less-often used options when showing the dialog. These dialogs have a **More** button in the bottom right corner; click on it to display the advanced options. If all options are displayed, the **Less** button appears. Clicking this button will hide the advanced options.



Click on the More/Less buttons to show/hide the advanced options

3.3 Connecting the Camera

Make sure that you only use switches or routers that support the **10/100 Mbps Ethernet interface** of the camera and check the LED activity of the corresponding port of the switch or router. For additional information on this topic, see section 4.11, *Operating Many Cameras*, in the *Software Manual*.

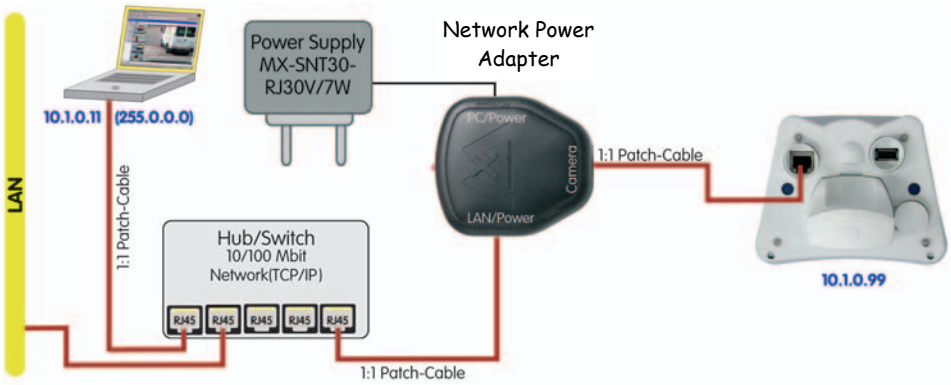
3.3.1 Power Supply Using MOBOTIX Products (Network Power Adapter)

1) Connect the **Camera** connector of the Network Power Adapter (NPA) to the **NET** connector of the camera.

2a) **Connecting to an Ethernet switch or router:**

- Connect the **LAN/Power** connector of the NPA to an Ethernet connector of the switch/router or the Ethernet wall outlet.
- Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the NPA.

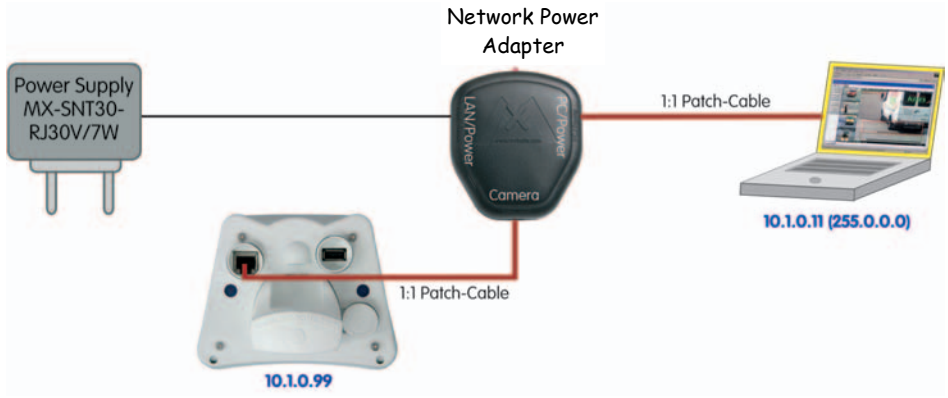
The Network Power Adapter replaces the crossover cable when directly connecting to a computer



2b) **Connecting directly to a computer:**

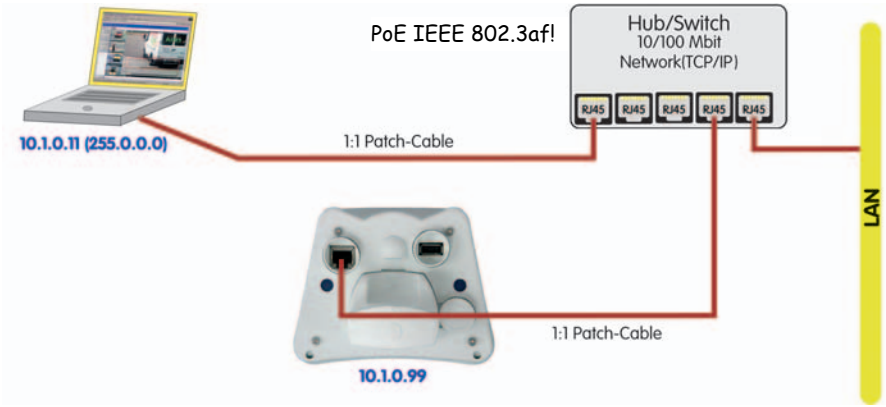
- Connect the **PC/Power** connector of the NPA to the Ethernet port of the computer.
- Plug the RJ45 connector of the external power unit into the **LAN/Power** connector of the NPA.

The NPA can eliminate a crossover cable that may be hard to obtain



3.3.2 Power Supply Using PoE Products (Power over Ethernet)

- Connect the **NET** connector of the camera to the Ethernet connector of the switch/router. The network components need to support the **PoE standard IEEE 802.3af**.



The network components (switches/routers) need to support the PoE standard IEEE 802.3af!

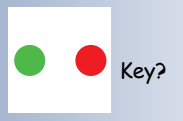
Note

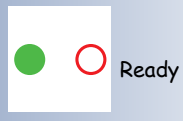
If you are using **Power over Ethernet components (IEEE 802.3af)** for supplying power to the MOBOTIX M22M, these components have to provide **PoE class 0** (12.95 Watts max. power consumption of attached device). Although the M22M only uses 3 Watts and does not require heating even at very low temperatures, this will ensure that devices attached to the USB port of the camera will be properly supplied.

3.3.3 Camera Startup Sequence

As soon as the camera's power supply has been established, the two LEDs will show the progress of the startup sequence:

- **Booting**: Once the power supply has been hooked up, the red LED lights up, blinks for two seconds, then lights up again. The camera's boot loader checks the hardware, unpacks and starts the operating system. All applications are verified using the checksums; **in case of an error**, the camera will start using the backup operating system instead.
- **Waiting for key pressed**: Both LEDs light up for four seconds. If you press one of the keys labeled **"R"** or **"L"** at the back of the camera, it will execute the corresponding function (see sections 3.5 and 3.6).
- **Ready**: Once the application software has been started, the green LED lights up (if it has not been switched off for this configuration). You can now access the camera using your browser (see section 5.4.3, *Configuring the LEDs and the Signal Input*, in the *Software Manual*).





Note

During the startup sequence or a software reboot, the LEDs will always light up, even if they have been deactivated in **Admin Menu > LED Setup**.

3.4 The First Image of the Camera

Once the Ethernet connection has been established (see section 3.4.1, *Preparing the Ethernet Connection*), you have the following possibilities to see the first image of the camera:

- **Direct access using a browser** (section 3.4.2, *The First Image in the Browser*)
- **Display the camera using MxViewer** (free Windows client for MOBOTIX cameras; section 3.4.2, *The First Image in MxViewer*)

Open the browser-based user interface of the camera to complete the remaining configuration tasks (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).

3.4.1 Preparing the Ethernet Connection

Caution:
Netmask 255.0.0.0

For this example, we will use a camera with the factory IP address **10.1.0.99**. **Replace this IP address by the IP address of your camera**. You will find this address on a **small sticker on the camera housing**. Accessing the camera is always the same and is independent of the connection type: simply enter the camera's IP address in the address field of the browser (see section 3.4.2, *The First Image in the Browser*).

Note

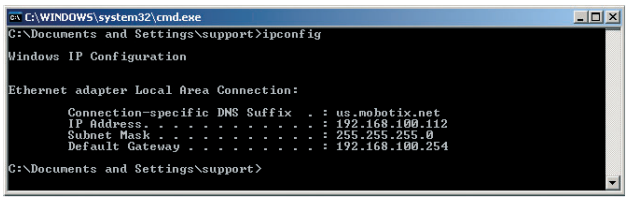
Pressing the **"R" key** on the back of the camera will let the camera **announce the current IP address of the camera using its voice output feature**.

Open a Command Prompt (Windows):
Start > Run, enter "cmd", then press [Return]

Your computer has to have a network or a wireless interface, and it should be in the same subnet as the camera. If your network also uses IP addresses of a class A network (e.g. 10.x.x.x, network mask **255.0.0.0**), you should be able to access the camera directly (provided no other network device uses the same IP address).

Determine the IP address of your computer:

- Open a command shell (Windows) or a console (Linux/Unix) and enter the following command:


C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\support>ipconfig
Windows IP Configuration
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . : us.mobotix.net
IP Address. . . . . : 192.168.100.112
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.100.254
C:\Documents and Settings\support>

Make sure that you replace 10.1.0.99 with the IP address of your camera

Windows 2000/XP: **ipconfig**
Linux/UNIX: **ifconfig**

You will find the IP address of your Windows computer after **IP address**; for Linux/UNIX computers, search for the **inet address** parameter of the **eth0** device (the first network interface). If your computer does not use an IP address in the 10.x.x.x range, you should change or expand the network configuration of your computer (see below).

Make sure that no other network device uses the camera's IP address:

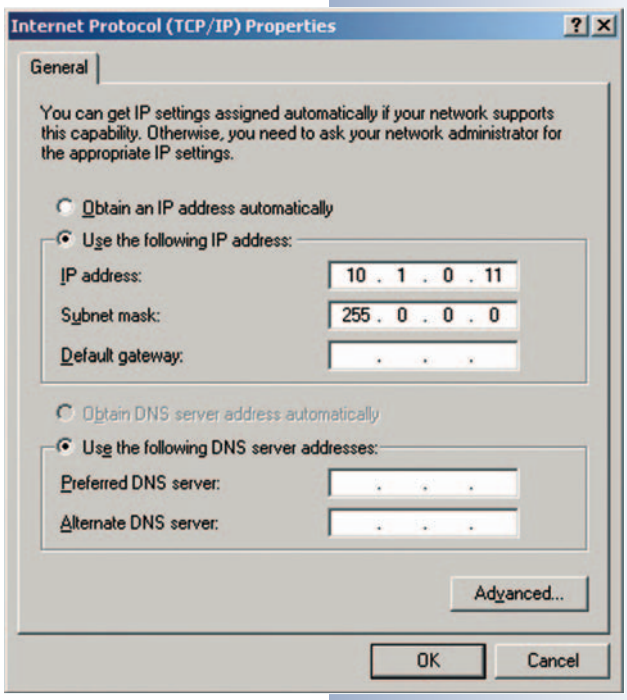
- Open a command shell (Windows) or a console (Linux) and enter the following command:
  `ping <factory IP address>`

The factory IP address is printed on the sticker on the camera housing

Example: `10.1.0.99`

If you receive an answer from another network device although the camera is not connected, you will have to remove that device until you have reset the MOBOTIX camera to a free IP address. We recommend using the Quick Installation wizard for this task.

If your computer does not use an IP address in the 10.0.0.0 network (e.g. a 192.168.x.x or 172.x.x.x network), you should add a second IP address to the network configuration of your computer or set a new IP address:


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
10 . 1 . 0 . 11
Subnet mask:
255 . 0 . 0 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Windows 2000/XP:

(1) Open the **Network Connections** and open the **Properties of LAN Connection**.
(2) Double-click **Internet Protocol (TCP/IP)**.
(3) Click on the **Alternative Configuration** tab.
(4) Enter an IP address (e.g. **`10.1.0.11`**) in the class A network (`10.x.x.x`) that is unique in your network and that is not the same as the camera's IP address.
(5) Close all dialogs by clicking on **OK**.

Linux/UNIX:

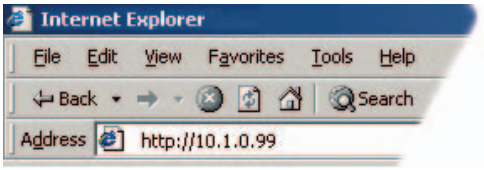
(1) Open a console as **`root`** user and enter the following command:
`ifconfig eth0:1 10.1.0.11`

The computer now has the additional IP address **`10.1.0.11`**, allowing it to access the camera with its factory IP address in the `10.x.x.x` network (**`10.1.0.99`** in this example).

3.4.2 The First Image in the Browser

Camera access:
http://10.1.0.99
(example IP)

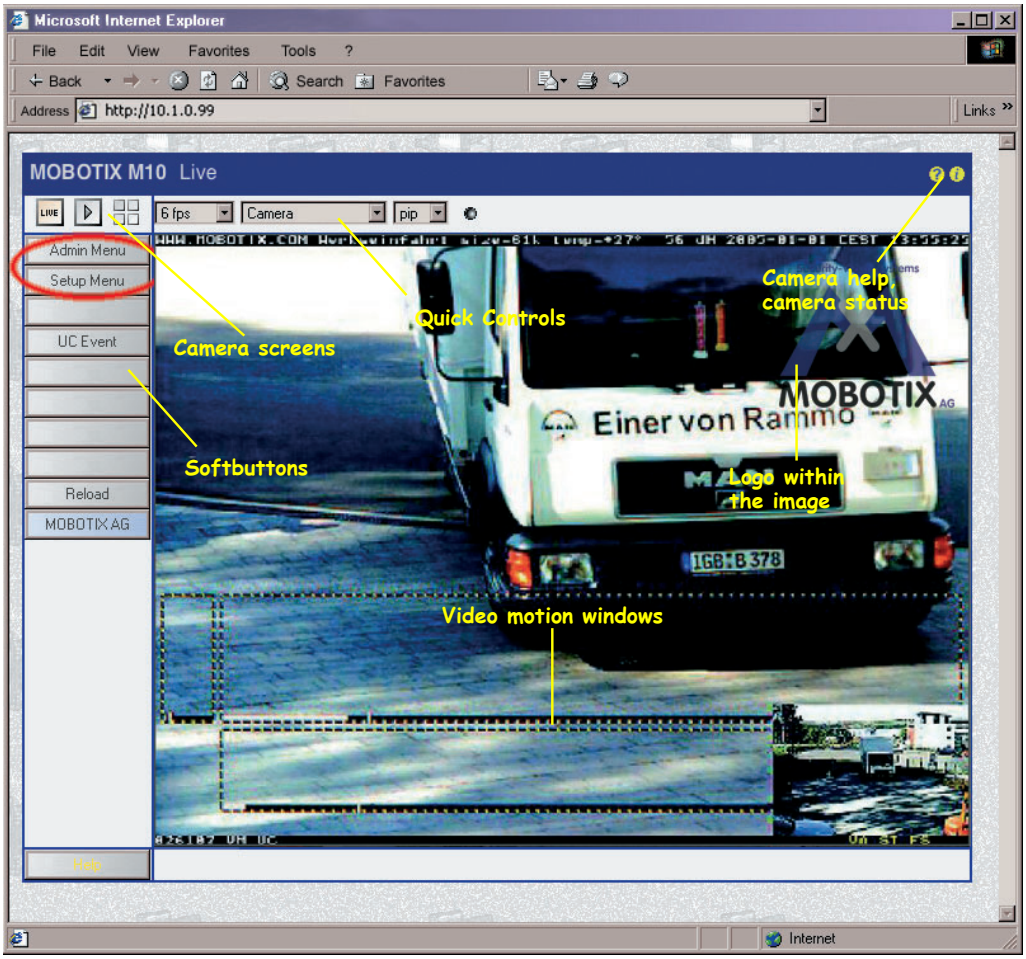
The factory IP address is printed on the sticker on the camera housing



As you have successfully started the camera for the first time, you can now access the camera using your preferred browser to see the live video stream and the user interface. Internet Explorer, Mozilla, Firefox, Safari or any other graphical browser with activated JavaScript is suitable. The operating system is of no importance, even PDAs can be used without any problems.

Administration menu:
User name: admin
Password: meinsm

User interface can be customized



After entering the camera's IP address in the browser address bar (e.g. `http://10.1.0.99`), you will see the Live screen of the MOBOTIX camera with its user interface controls, such as softbuttons, buttons for the different camera screens, **pull-down menus** (*Quick Controls*), icons for accessing the **online help** and the **camera status**, and status information elements above and below the live image.

Notes

Factory Defaults: Every MOBOTIX camera has its individual factory IP address (e.g. **10.1.0.99**). You will find this address on a small sticker on the camera housing. If you have started the camera using DHCP or you have set the IP address manually, use the new IP address (e.g. **192.168.0.99**) instead of the factory IP address. Pressing the **"R" key** on the back of the camera will prompt the camera to announce its current IP address. For additional information on this topic, see section 3.5, *Starting the Camera With an Automatic IP Address (DHCP)*.

Troubleshooting: If your web browser does not show the camera's Live screen after you have entered the IP address, you should try to locate and resolve the error as described in chapter 12, *Troubleshooting*, in the *Software Manual*.

MxViewer: In order to see the live image of the camera, you can also use other applications or the integrated programming interface of the MOBOTIX camera. **MxViewer** for Windows is such an application and is provided **free of charge** by MOBOTIX. Besides its ability to display fast live video of up to **30 cameras with 30 fps** each on one PC, MxViewer also allows recording and playing back video clips with realtime audio via the network and can control pan/tilt heads using a joystick or the mouse. Download the newest version of MxViewer from the MOBOTIX homepage. The website also contains more information on MOBOTIX systems as well as the MxViewer help.

Changing the factory IP address: Always use Admin Menu > Quick Installation

Not available for **Web** and **Basic** models

3.4.3 Additional Information

For more information on this topic, see the **News** and **Functional Overview** pages in the online help of the camera's browser interface. Click on the yellow icon in the top right corner to open the camera's online help.

Camera Help

In order to get more information on the camera and its current configuration, open the Camera Status dialog by clicking on the yellow icon in the top right corner of the camera's browser interface.

Camera information

Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from **www.mobotix.com**. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

3.4.4 Camera Screens in the Browser

By factory default, the MOBOTIX camera first shows the **Live** screen. You can set a different entry page in order to prevent others from changing settings; you can assign user names and passwords to prevent unauthorized access or you can restrict access to the current live image only, by setting the **Guest** screen as entry page.

Use the Administration menu to set the camera screen that should appear initially when accessing the camera IP address

The following screens are available:

- **Guest** screen: Only shows the current live image with reduced frame rate (see section 4.7, *The Guest Screen*, in the *Software Manual*).
- **Live** screen: Shows the current live image and allows changing the image and event settings of the camera (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).
- **Playback** screen: Shows all recorded images or video clips with extended functions for searching and downloading images, regardless of where the images are stored (in the internal or the external ring buffer on a file server or PC; see section 4.4, *The Playback Screen in the Browser*, in the *Software Manual*).
- **MultiView** screen: Shows multiple cameras or the last events in a freely definable layout (see section 4.5, *The MultiView Screen in the Browser*, in the *Software Manual*).
- **PDA** screen and **PDA Event List**: Both screens are optimized for PDAs with a focus on fast data transmission with low bandwidth requirements (GSM, GPRS) on devices with small displays (PDAs, mobile phones, sub notebooks). The PDA Event List in particular gives a quick overview over the last events since the live image is not transferred (see section 4.6, *The PDA Screen*, in the *Software Manual*).

http://10.1.0.99/pda opens the PDA screen

Live/Playback/MultiView: Click on ? to open the online help pages for the camera screens

Note

Open **Admin Menu > Language and Entry Page** to set a different start page when accessing the camera.

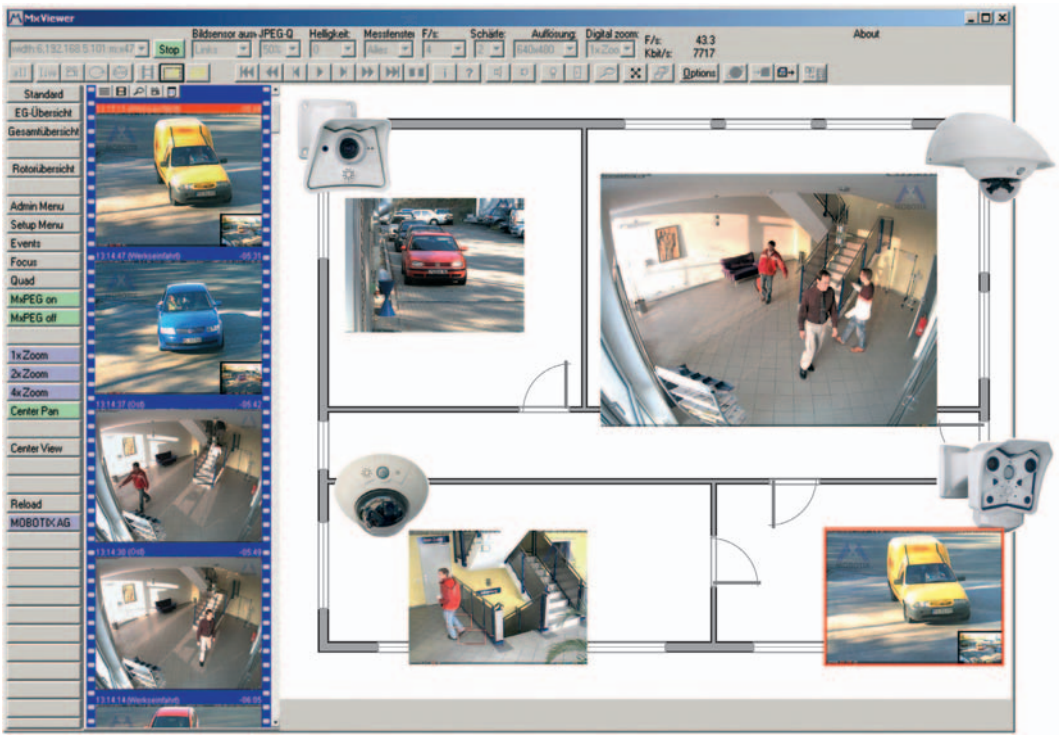
Open **Admin Menu > Users and Passwords and Admin Menu > Group Access Control Lists** to set user rights and to prevent unauthorized access to certain screens (see section 5.4.1, *Passwords*, in the *Software Manual*).

For more information on camera screens, see the **online help** of the camera's browser interface. Click on the yellow ? icon in the top right corner of the **Live screen** to open the corresponding page of the online help.

3.4.5 The First Image in MxViewer

MxViewer is a free Windows application that allows displaying **multiple MOBOTIX cameras** on one computer and provides alarm management functions. It can easily handle displaying **30 cameras with CIF resolution** at **30 fps each** in **MxPEG** format on one standard PC with Intel Pentium 4 and 3 GHz.

Download MxViewer free of charge from www.mobotix.com



MxViewer Windows client with background image and freely positionable cameras

MxViewer can do quite a bit more than simply display the video and audio data from MOBOTIX cameras. The unique features of MxViewer and the MOBOTIX cameras create a full-featured security system: Intelligent alarm handling, manifold possibilities of arranging the cameras on layouts (MultiView screens), ability to display cameras that are sending alarm notifications, and integrated camera management functions.

Installing and Starting MxViewer

Download MxViewer free of charge from www.mobotix.com

Follow these steps to install MxViewer:

- Download the newest version of MxViewer as a ZIP file: `http://www.mobotix.com/Download/mxpeg.php`.
- Create a new folder in the Windows program files folder, e.g.: `C:\Program Files\MOBOTIX\MxViewer`.
- Copy the contents of the ZIP file into the folder you just created.
- Create a shortcut by right-clicking on **`MxViewer.exe`** in the folder you just created.
- Copy the shortcut to the desktop.

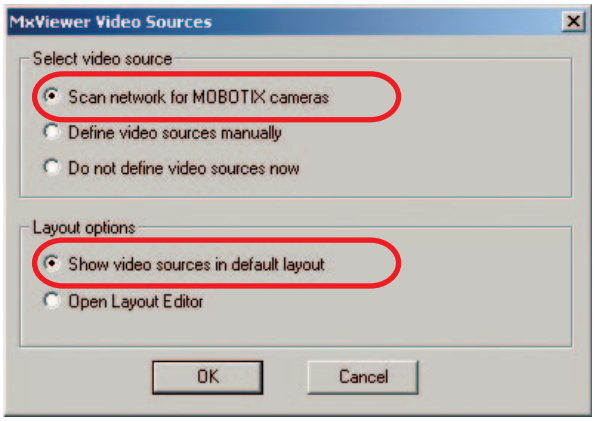
Double-click the shortcut or the program file itself to start MxViewer.

Defining Video Sources

Defining cameras as video sources

If you start MxViewer for the first time on a computer without having defined any video sources before, the **MxViewer Video Sources** dialog will appear.

Depending on the task at hand, select the appropriate option in the **Select video source** group:



- **Scan network for MOBOTIX cameras** (default): Click on **OK** to open the **Scan Network for MOBOTIX Cameras** dialog. The camera will automatically scan the subnet for MOBOTIX cameras and will display the list of camera IP addresses.
- **Define video sources manually**: Click on **OK** to open the **Define Video Sources Manually** dialog and manually add the cameras.

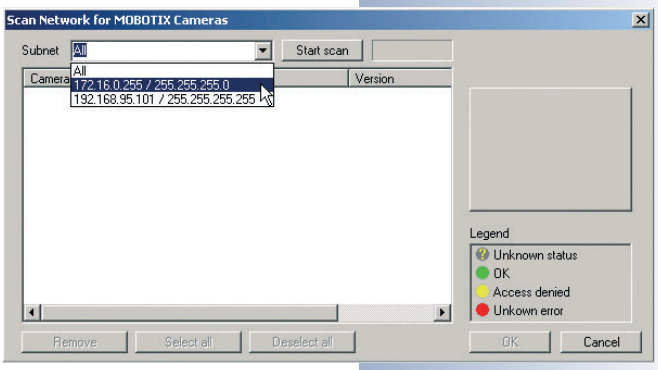
In the **Layout options** group, select **Show video sources in default layout**. This will prompt MxViewer to automatically generate a standard layout that comprises all video sources (i.e. cameras) once they have been defined either automatically or manually.

Automatically Searching MOBOTIX Cameras in the Same Subnet

MxViewer displays the **Scan network for MOBOTIX cameras** dialog:

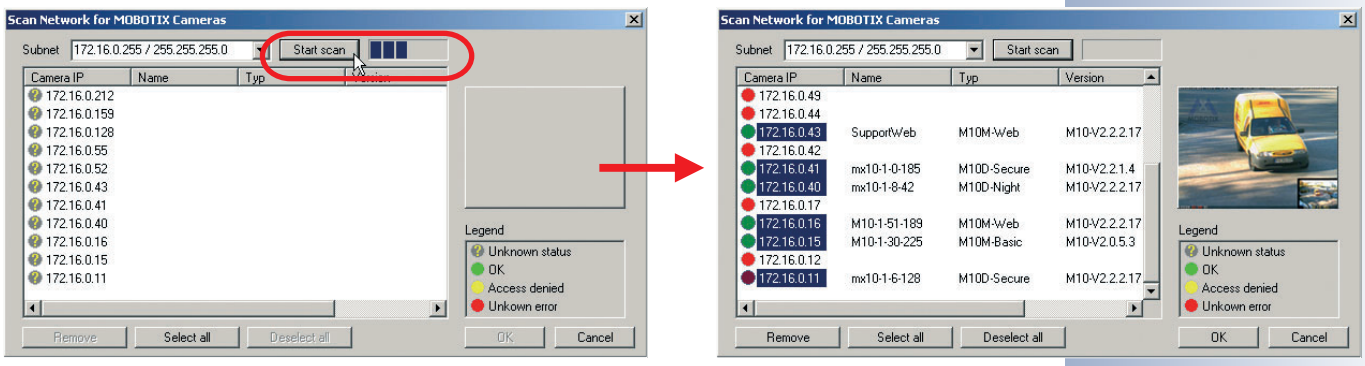
- Click on the **Subnet** dropdown list and select the desired subnet.
- Click on **Scan** to start the camera search.

If MxViewer finds only one subnet, the scanning process will start automatically.



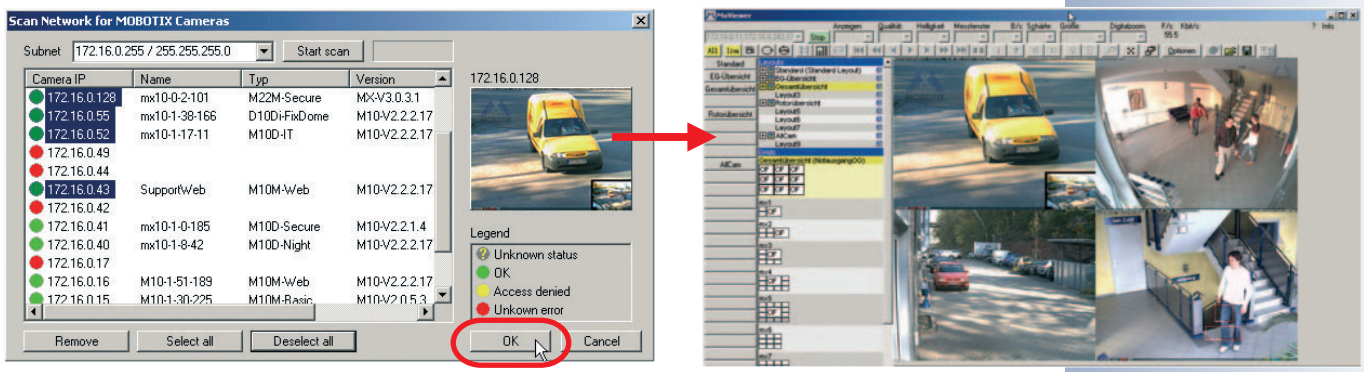
In the first pass, MxViewer searches the selected subnet for MOBOTIX cameras and in the second pass, MxViewer verifies if it can access the cameras.

MxViewer then highlights all cameras in the list, which have a status of *OK* or *Access denied*:



Using the Highlighted Cameras

Click on **OK** to use the *highlighted* cameras and to include them in the default layout generated by MxViewer:



Enhanced search features

Automatically Searching MOBOTIX Cameras in all Subnets

Future versions of MxViewer will be able to search MOBOTIX cameras not only in the current subnet of the computer, but also in all subnets, which can be reached within the same physical network (e.g. not closed off by routers or other mechanisms).

This means that MxViewer can find cameras with factory IP address (e.g. **10.1.0.99** as in our sample), although the computer is in a different subnet (e.g. **172.16.0.0**).

MxViewer can thus find MOBOTIX cameras automatically and without changing the computer configuration if the camera has been plugged into the same switch as the computer, for example.

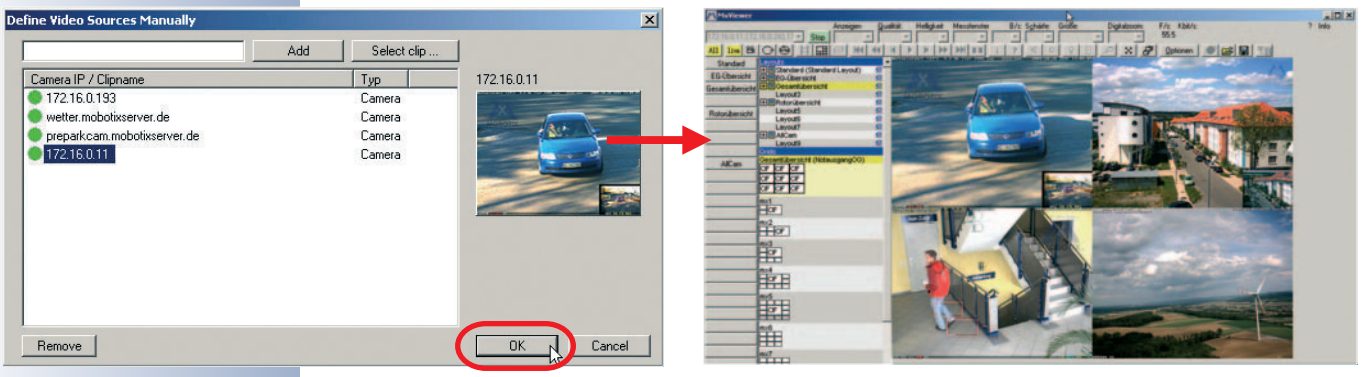
Manually adding cameras and loading recorded video streams

Manually Defining MOBOTIX Cameras

If you have selected the **Define video sources manually** option in the **MxViewer Video Sources** dialog, you can manually add the IP addresses or DNS names of the MOBOTIX cameras.

- **Add**: Adds the IP address or DNS name of the MOBOTIX camera you entered to the list.

If possible, MxViewer shows the image of the last camera you added in the preview window. Click on **OK** to use *all* cameras in the list and to include them in the default layout generated by MxViewer:



MxViewer can show multiple MxPEG clips at once!

Displaying MxPEG Video Clips

MxPEG video clips represent the files that contain the video and audio data stored by either MOBOTIX cameras or MxViewer. These clips can be displayed in MxViewer just like the camera images. In order to display one or more MxPEG video clips, activate the **Layout Editor**, right-click the desired camera windows of the layout one by one and select the **Load Clip** command.

To download sample MxPEG video clips, open the MOBOTIX website **www.mobotix.com**.

Further Information on MxViewer

For further information on **MxViewer**, download the *MxViewer User Manual* from **www.mobotix.com**:

- Saving and loading MxPEG video clips
- Creating and editing layouts using the Layout Editor

Note

Use MxViewer's **Layout Editor** to design the layout of the camera display on the screen (number of cameras, arrangement, size). The editor supports drag&drop, MxPEG clips, and allows using building or property plans and similar graphics as a background image.

Further Information in the Software Manual

- Section 4.3.5: *JPEG, MxPEG and Audio*
- Section 4.3.6: *Background Information on JPEG, MxPEG and Audio*
- Section 4.10: *Fast Video Streaming*

3.5 Starting the Camera With an Automatic IP Address (DHCP)

If your network has a DHCP server, you can start the camera with DHCP support. In this case, the DHCP server automatically assigns an IP address.

Activate the camera speaker!

As soon as startup has been completed, the camera automatically announces its IP address, its network mask and its MAC address (except Web and Basic models; speaker has to be activated). Note, that this announcement function can be deactivated (**Admin Menu > Loudspeaker and Microphone**).

Proceed as follows to start the camera using DHCP:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Connect the camera's power supply.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the **"R" key** on the back of the camera **within four seconds**.

Press "R" key

"R" key

- After about two more seconds, the camera plays a sound ("Boing, Boing").
- After about another 15 seconds, the camera will announce its network data, provided it has audio functionality.

You can now access the camera using the IP address it just announced.

Announce IP address: Press **"R" key**

Notes

Simply press the **"R" key** once if you would like to prompt a running camera to announce its network settings.

In case of an error, the camera uses its last IP address

Caution

When starting the camera with DHCP support, make sure that the network has a properly functioning DHCP server. If this is not the case, the camera cannot obtain a valid IP address and will fall back to its last known IP address.

3.6 Starting the Camera Using the Factory IP Address

Under certain circumstances, you may have to reset the camera to its factory IP address. This could be the case if the IP address of the camera has been lost or the camera does not react to the last known IP address.

Passwords and camera settings will not be changed!

Proceed as follows to start the camera using its factory IP address:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Connect the camera's power supply.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the **"L" key** on the back of the camera **within four seconds**.

Press "L" key

"L" key

- After about two more seconds, the camera plays a sound ("Boing").

The camera is now accessible again using its factory IP address (see label on the camera housing).

Note

If you use the camera's **"L" key** to load the factory network configuration, this configuration is not automatically saved to flash memory. Upon restarting the camera the next time **without** using the camera's **"L" key**, the *last stored network configuration* will be used. To permanently store the new network configuration in the camera's flash memory, open **Admin Menu > Store ...**

Make sure you store the factory network configuration to the permanent flash memory

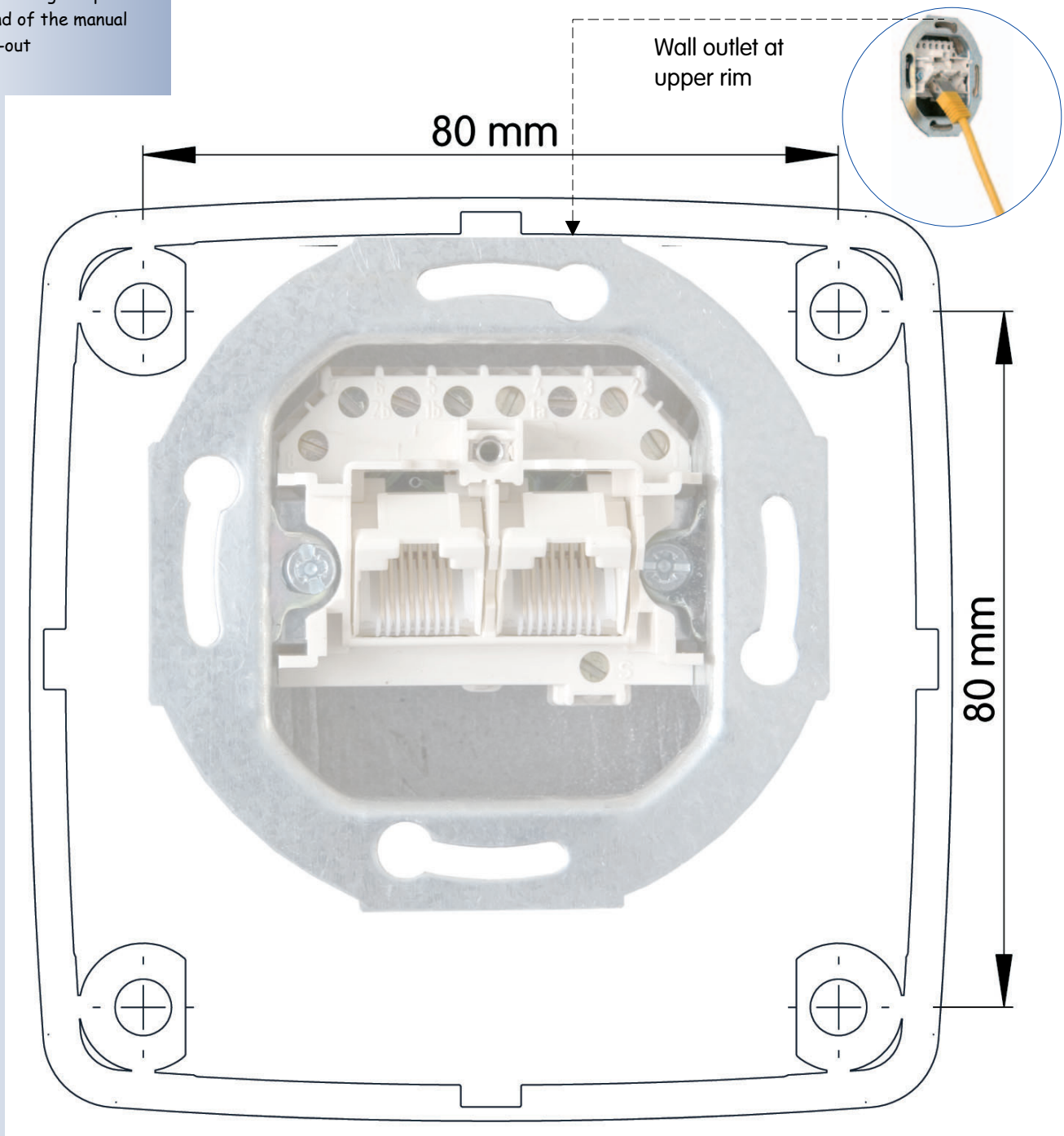
Caution

As opposed to resetting the camera using *Admin Menu > Reset configuration to factory defaults* (see section 1.4.5), the users and passwords defined in the camera will *not* be reset if the camera is being booted using the factory IP address.

Users and passwords will not be changed!

3.7 Drilling Template M22M (Scale 1:1)

Find the drilling template at the end of the manual as a fold-out



Note

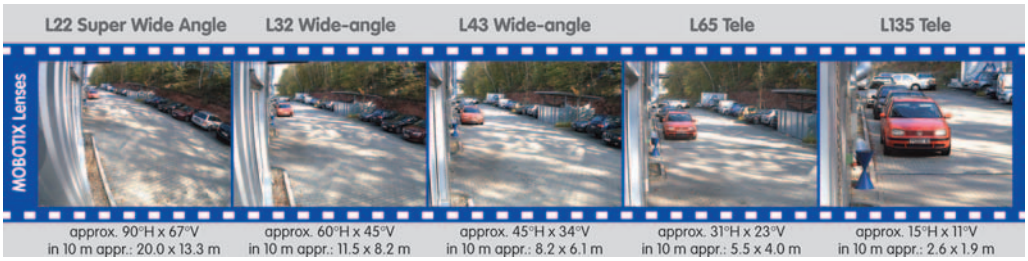
Make sure that the drilling template is not scaled (up or down) when printing the template.

When printing the PDF, make sure that you print two facing PDF pages on one single A4 page in order to obtain a scale 1:1 template.

Notes:

	M22M-Basic *Mx-M22M-Basic-D43*	**M22M-IT** *Mx-M22M-IT-D22*	**M22M-Sec** *Mx-M22M-Sec-D22*	**M22M-Sec-Night** *Mx-M22M-Sec-Night-N22*	**M22M-Sec-CS** *Mx-M22M-Sec-CSVario*	**M22M-Sec-Night-CS** *Mx-M22M-Sec-Night-CSVario*
M22M Hardware Features						IP65
Outdoor weatherproof (IP65)	IP65	IP65	IP65	IP65	IP65	IP65
Mono (M) / Dual (D)	M	M	M	M	M	M
Image Sensor	Color	Color	Color	B/W	Color	B/W
Image size	**VGA**	**VGA**	**Mega**	**Mega**	**Mega**	**Mega**
Resolution horizontal x vertical	640x480	640x480	1280x960	1280x960	1280x960	1280x960
Max. frame rate CIF/VGA/Mega	16/16/-	30/30/-	30/30/10	30/30/10	30/30/10	30/30/10
Sensitivity at 1/60 second (Lux)	1	1	1	0.1	1	0.1
Sensitivity at 1 second (Lux)	0.05	0.05	0.05	0.005	0.05	0.005
Automatic night lens switch	-	-	-	-	-	-
Standard lens	L43	L22	L22	L22	L24-54	L24-54
Storage (MB)	**64**	**64**	**128**	**128**	**128**	**128**
Video ring buffer (MB)	2	32	64	64	64	64
CIF images approx.	100	2,000	4,000	4,000	4,000	4,000
VGA images approx.	50	1,250	2,500	2,500	2,500	2,500
Mega images approx.			800	800	800	800
Ethernet, ISDN, USB, RS232	E /- / U /-	E /- / U /-	E /- / U /-	E /- / U /-	E /- / U /-	E /- / U /-
CF slots (MOBOTIX extensions)	-	2	2	2	2	2
Microphone/Speaker	-/S	M/S	M/S	M/S	M/S	M/S
External audio (Line-In/Out)	-	-	-	-	-	-
Signal Input (only via Cam-IO*)	-	2 x	2 x	2 x	2 x	2 x
Signal Output (only via Cam-IO*)	-	2 x	2 x	2 x	2 x	2 x
Concealed cabling	X	X	X	X	X	X
On stock	Yes (Jul 06)	Yes	Yes	Yes	No	No

* Cam-IO extension box is optional accessory


L22 Super Wide Angle
L32 Wide-angle
L43 Wide-angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V
in 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V
in 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V
in 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V
in 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V
in 10 m appr.: 2.6 x 1.9 m

	Basic Models	Web Models	IT Models	Secure Models
Software Features (All Models)				
Digital zoom (2x, 4x) with panning		X		X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X	X/X
Custom exposure windows	X	X	X	X
Video Motion Detector	X	X	X	X
Time and event control (FTP, email, logos)	X	X	X	X
Time tables with holidays	X	X	X	X
Web functionality (FTP, email)	X	X	X	X
Quad/MultiView in browser	X	X	X	X
Recording/Playback in browser	X	X	X	X
Logo generator, animations		X	X	X
Single image recording (pre-/post-alarm images)	3	3	10	50
Terabyte ring buffer (Win/Lin/Mac) via network			X	X
Continuous video/audio recording, 0.2 to 30 fps			X	X
Video/audio recording (event-triggered)			X	X
Event-controlled frame rate with continuous sound			X	X
Flexible event logic				X
Master/Slave arming by one camera				X
Scheduled privacy zones, several areas				X
Bidirectional audio (IP) from/to browser			X	X
Customized voice messages			X	X
VoIP telephony (Audio/Video, SIP)			X	X
Alarm calls to softphones (SIP) e.g. Xten			X	X
Remote alarm notification (via TCP/IP, IP Notify)			X	X
RS232 Data Logger/Terminal			X	X
Programming interface/HTTP API			X	X
Model Limitations				
Image size	VGA	Mega	VGA	Mega
Image sensor (color / B/W)	Color	Color	Color & B/W	Color & B/W
Standard lens for software version	D43	D43	L22*	L22*
Audio support (Microphone/Speaker)	-/S	-/S	M/S	M/S

* M10 delivered with L43 standard lens

IP65 Certificate

VDE Prüf- und Zertifizierungsinstitut

VDE VERBAND DER ELEKTROTECHNIK
ELEKTRONIK INFORMATIONSTECHNIK e.V.

KONFORMITÄTSBESTÄTIGUNG
STATEMENT OF COMPLIANCE

Für das (die) überprüfte(n) Produkt(e)
for the approved product(s)

Erzeugnis *Product*	**Security Netzwerk-Kamera** ***Security network camera***
Typenbezeichnung *Model/Type ref.*	**MX-M22-Sec-D22**
Weitere Information(en) Further information	**IP65**
Warenzeichen *Trade mark*	MOBOTIX
Auftraggeber / Hersteller Client / Manufacturer	**MOBOTIX AG** **Luxemburger Strasse 6** **67657 Kaiserslautern**
Angewandte Normen Applied standards	**DIN EN 60529/VDE 0470 Teil 1:2000-09** **EN 60529:1991 + A1:2000** **Abschnitte / Clauses: 12; 13; 14**
Prüfbericht-Nr. *Test report reference no*	**2514700-9010-0001/76548 FG33/bhl** **2006-10-16**

Die Konformitätsbestätigung erfolgt auf Basis einer einmaligen Untersuchung von Produkten, die in einer zwischen Auftraggeber und VDE vereinbarten Menge aus der laufenden Produktion oder dem bereitgestellten Versandlos entnommen wurden. Sie bezieht sich ausschließlich auf die entnommenen Muster. Bei der im Prüfbericht dokumentierten Untersuchung wurden keine Abweichungen festgestellt. Detaillierte Ergebnisse sind dem Prüfbericht zu entnehmen.
Diese Überprüfung berechtigt nicht zum Führen eines VDE-Zeichens.
The statement of compliance is based on a single inspection carried out on the basis of the samples selected from running production or from a provided delivery lot of a quantity agreed between applicant and VDE. It only refers to the selected samples. No diviations were detected during the inspection documented in the test report. Detailed results can be taken from the test report.
This inspection is no authorization to use VDE marks.

Ausstellungsort / Datum
Place of issue / date

Offenbach, 2007-01-29

VDE Prüf- und Zertifizierungsinstitut
VDE Testing and Certification Institute

Leiter Fachbereich F3
Head of Deparment F3

VDE Prüf- und Zertifizierungsinstitut *VDE Testing and Certification Institute* Merianstraße 28 63069 Offenbach Germany www.vde.com

FCC Declaration of Conformity

DECLARATION OF CONFORMITY

Applicant:	**MOBOTIX AG** **Luxemburgerstr. 6** **67657 Kaiserslautern** **Germany**
Type of Equipment:	**Camera**
Model Number:	**M22**
Serial Number:	**10.2.1.175**
Test Report Number:	**266.307**
Test Report Is On File At:	**EMV Testhaus GmbH** **Gustav-Hertz-Straße 35** **94 315 Straubing** **Germany**

Deutscher Akkreditierungs Rat DAR

DAT-P-224/95-02 / BNetzA-CAB-02/21-02/1

This device complies with Part 15 of the FCC Rules for Class B Devices.

Regulation:	**United States Code of Federal Regulations 47** **Part 15 Digital Devices, Subpart B unintentional radiators, Class B**
Standard:	**ANSI C63.4-2003 Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical Equipment in the Range of 9 kHz to 40 GHz.**
Limit:	**DIN EN 55022:1998-04 Information Technology Equipment Radio Disturbance Characteristics – Limits and Methods of Measurement**

Verified by: Michael Hofmann

Date: Straubing, June 28th, 2006

Declaration of Conformity

Konformitätserklärung gemäß dem Gesetz über Funkanlagen und Telekommunikationsendeinrichtungen (FTEG) und der Richtlinie 1999/5/EG (R&TTE)

Declaration of Conformity in accordance with the Radio and Telecommunications Terminal Equipment Act (FTEG) and Directive 1999/5/EC (R&TTE Directive)

Déclaration de conformité selon la loi sur les équipements hertziens et les équipements terminaux de télécommunication (FTEG) et la directive 1995/5/EC (R&TTE)

Hersteller/verantwortliche Person: Manufacturer/responsible person: Fabricant/personne responsable :	MOBOTIX AG
erklärt, dass das Produkt: declares that the product: déclare que le produit :	Netzwerk-Kamera Network camera Caméra de réseau
Typ: Type: Type :	M22M
Telekommunikations(Tk-)endeinrichtung Telecommunications terminal equipment Equipement de terminal de télécommunication	Netzwerk-Kamera Network camera Caméra de réseau
Verwendungszweck: Intended purpose: Le but suivi :	Übertragung von Bildern und Toninformationen Transmission of images and audio information Transmission d'images et du son

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the essential requirements of §3 and the other relevant provisions of the FTEG (article 3 of the R&TTE Directive), when used for its intended purpose.
est conforme aux exigences fondamentales du paragraphe 3 du FTEG (article 3 du R&TTE) et des autres clauses s'y rapportant.

Gesundheit und Sicherheit gemäß § 3 (1) 1. (Artikel 3 (1) a))
Health and safety requirements pursuant to § 3 (1) 1. (article 3 (1) a))
Santé et sécurité conformes au paragraphe 3 (1) 1. (article 3 (1) a))

angewendete harmonisierte Normen: EN 60950:2000 (NSR 73/23/EWG & 93/68/EWG)
harmonised standards applied: (LVD 73/23/EWG & 93/68/EC)
normes harmonisées : (Directive Basse Tension 73/23/EWG & 93/68/EC)

Schutzanforderungen in Bezug auf die elektromagn. Verträglichkeit § 3 (1) 2, Artikel 3 (1) b))
Protection requirements concerning electromagnetic compatibility § 3 (1) 2, (article 3 (1) b))
Exigences de protection concernant la compa tibilité électromagnétique, paragraphe 3 (1) 2; (article 3 (1) b))

angewendete harmonisierte Normen:
harmonised standards applied:
normes harmonisées :

EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
EN 55022, Class B, EN 55024, EN 61000-6-2, EN 61000-6-3
(EMV-RL 1995/5/EG (R&TTE)) (EMCD 1995/5/EG (R&TTE)) (Directive EMC 1995/5/EG (R&TTE))

Anschrift:
Address:
Addresse :

MOBOTIX AG
Luxemburger Str. 6
67657 Kaiserslautern
Germany

+ TK-Nr. / Phone number / N° de communication:

Fon: +49 (631) 3033-100
Fax: +49 (631) 3033-190
E-Mail: info@mobotix.com

Kaiserslautern, 29.02.2006

Ort, Datum
Place & date of issue
Lieu et date

Dr. Ralf Hinkel
Vorstand/CEO, MOBOTIX AG

Name und Unterschrift
Name and signature
Nom et signature

MOBOTIX ... the new face of IP video

All pictures in this manual are genuine MOBOTIX camera images.
Enjoy the image quality!

Manufacturer:

MOBOTIX AG
Luxemburger Str. 6
67657 Kaiserslautern

Germany

Tel.: +49 (631) 3033-100
Fax: +49 (631) 3033-190

http://www.mobotix.com
sales@mobotix.com

CEO:

Dr. Ralf Hinkel

Court of Registration:
Amtsgericht Kaiserslautern
Registration Number: HRB 3724

Tax Code: 19/650/0812/1
Tax Office: Kaiserslautern

VAT ID: DE 202203501

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CE

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Megapixel
1280 x 960
software zoom

30 Frames/s
VGA (640 x 480)
10 fps Mega

-22°F to +140°F
Weatherproof
-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af
PoE
network power
even in winter

microphone & speaker
Audio
bi-directional via IP
variable framerates

Video SIP Client
IP-Telephony
alarm notify,
cam remote control

Video motion
multiple windows
precision pixel-based

lip-syncronized audio
Recording
event-ringbuffer
30 cams each 30 fps

Live viewing
30 cams at 30 fps
all on one screen

Backlight
safe using CMOS
without mechanical iris

Wall bracket
with cable cover
for RJ45 wall outlet

Robust
no moving parts
fiber glass housing

MX-M22M-CM-EN-03

M22M
Camera Manual
Part 1

Complete integration for web and security

Current PDF File:
www.mobotix.com > Services > Manuals

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